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We put the Maci

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In 1984, Apple told the world why 1984 was not going to be like 1984—and Microsoft was the only independent developer to ship software the same day the Macintosh shipped.

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Words alone, however, fail to define the scope of Microsoft's involvement with the Macintosh.

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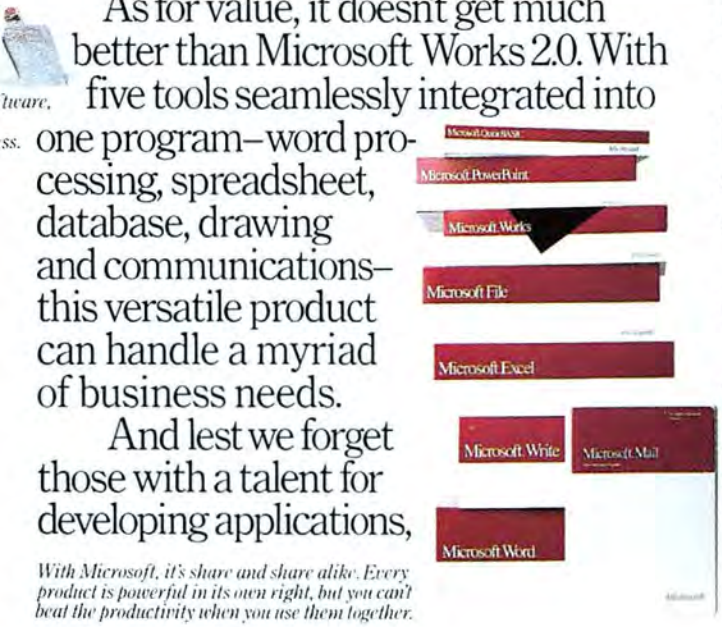
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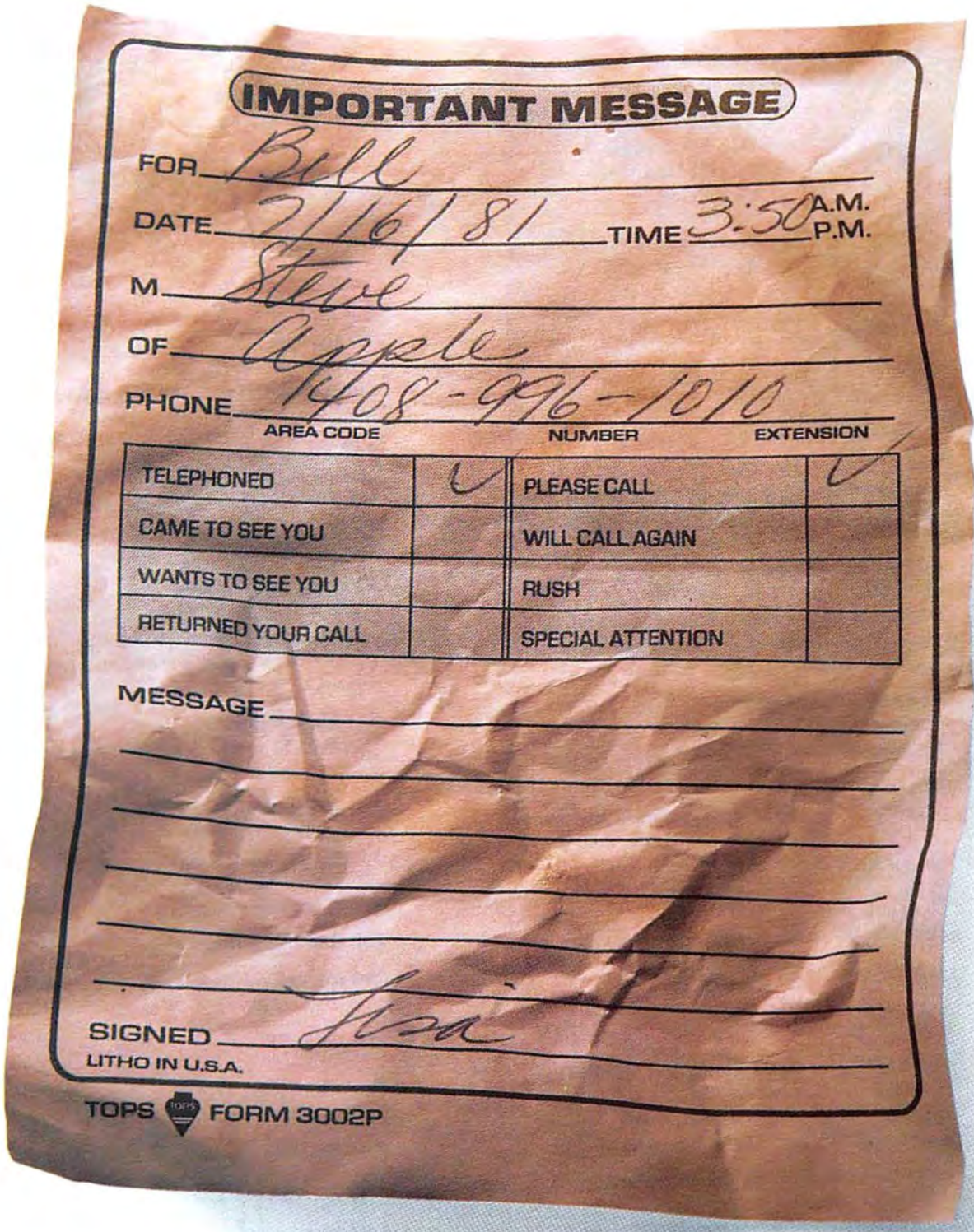
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MESSAGE

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Cover Story



91 The Fourth Annual Editors' Choice Awards
The best and the brightest. Stand-out hardware and software products of the past year.

Special Report

NETWORKING

102 Remote Control
BY ANDREW GORE
Sit down with a computer a thousand miles away. A close inspection of some far-out software: Timbuktu Remote, Telefinder, and Okyto.

114 Following Protocol
BY REESE JONES
The mysteries of AppleTalk Filing Protocols revealed at last.

MacUSER LABS

151 Making a Small Net Work
BY JOHN RIZZO, HENRY BORTMAN, AND THE MACUSER LABS STAFF
LocalTalk or Ethernet? AppleShare or TOPS? Upgrade or switch? MacUser Labs shows how to fine-tune your small network.

Features

126 The Art of Persuasion and MORE II
BY ROBERT R. WIGGINS
The two top presentation packages square off. Which is easier to master? More flexible? More powerful?

136 Word Processing with Character
BY PAMELA SUE BURDMAN
The original graphic language comes to the original graphic computer.



136 The Chinese Macintosh? Character processing.

Departments

20 Letters
FROM THE MAC COMMUNITY
Readers sound off on WordPerfect, QuarkXPress, and DOS.

195 Tip Sheet
COMPILED BY GREGORY WASSON
Flow PageMaker text into any irregular shape; easy dotted lines in Cricket Draw; modify the Finder to save window space.

237 The Help Folder
BY CHRIS ESPINOSA
Sound out cdevs, fill out forms, round out your Macintosh Technical Notes collection, and discover how to conserve precious RAM.

244 MiniFinders
More than 350 capsule reviews to help you buy smarter, plus latest version updates.

301 Scrapbook
EDITED BY KRISTI COALE
Arkanoid breaks out, a man showers with his hard disk, and we award the "Shreddies" to honor hype, hope, and hoopla in the Mac marketplace.

295 Coming Soon

296 Advertiser Index

Quick Clicks

EDITED BY RUSSELL ITO
Reviews of new Macintosh products:

- **45 Photon Paint**
- **47 WriteNow 2.0**
- **51 Microsoft Works 2.0**
- **62 MacSchedule**
- **64 MBA Series**
- **68 MultiDisk**

MAY 1989
VOLUME 5
NUMBER 5

Bridges

225 Connectivity News
EDITED BY HENRY BORTMAN
Big-time connections: Oracle for the Mac and Timbuktu Remote.

230 Trouble Shots
BY KURT VANDERSLUIS
Correct network topology might be the missing ingredient in your network's performance.

Desktop Publishing

175 Between the Lines
EDITED BY AILEEN ABERNATHY AND SALVATORE PARASCANDOLO
Hot new DTP products from the Expo plus reviews of LetraStudio, Springboard Publisher, and FONTastic Plus 2.0.

179 Fine Print
BY TONY BOVE AND CHERYL RHODES
How to move and resize graphics with PageMaker, Ready,Set,Go!, and QuarkXPress.

191 Font Follows Function
BY SAL GLYNN AND CARL HAEBERLE
Three designers show how to pick the best font for your publication's personality.

Hyperspace

201 NewsLinks
EDITED BY LAURA JOHNSON
Chapter and verse on the HyperBible, Mac debuts on Disney, and history is made on CD-ROM.

211 Card Tricks
BY MICHAEL SWAINE
Do developers have a future?

217 Flash Cards
BY LAURA JOHNSON AND VICTORIA JUAREZ
Stacks for the next generation.



191 Pick the right font. Top designers show how.

Cover Photo by Mel Lindstrom



New Mac IIcx

30 Another star is born — the IIcx.

News

30 New on the Menu
EDITED BY RUSSELL ITO
Apple's newest Mac: the extraordinary IIcx. Plus a report from Macworld, industry info, News Line, and more.

Columns

9 Frederic E. Davis • Editor's Desktop
It took more than Apple to make the Mac.

33 William Zachmann • Macintosh Analyst
Is IBM stealing Mac developers?

77 Louise Kohl • Control Panel
The global computer village.

81 Jim Seymour • Mainstream Mac
You knew they were Big; here's why they're Blue.

85 Robert R. Wiggins • Pinstripe Mac
Don't be a software sucker.

306 John C. Dvorak • Devil's Advocate
Fear and clothing in San Francisco.

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Eastern Advertising Director Suzanne M. Zellner (617) 375-4681
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We love to get tips and hints (on disk, please) from our readers. Any tips should be sent to The Tip Sheet, c/o *MacUser* Magazine, 950 Tower Lane, 18th floor, Foster City, CA 94404. We can't print every tip, but we try our best to pick the most interesting and representative ones for publication. We'd also like to hear from any programmers who are interested in contributing to our utilities disk series or labs benchmark disk series. If interested, contact Michele Stokol, at the same address.

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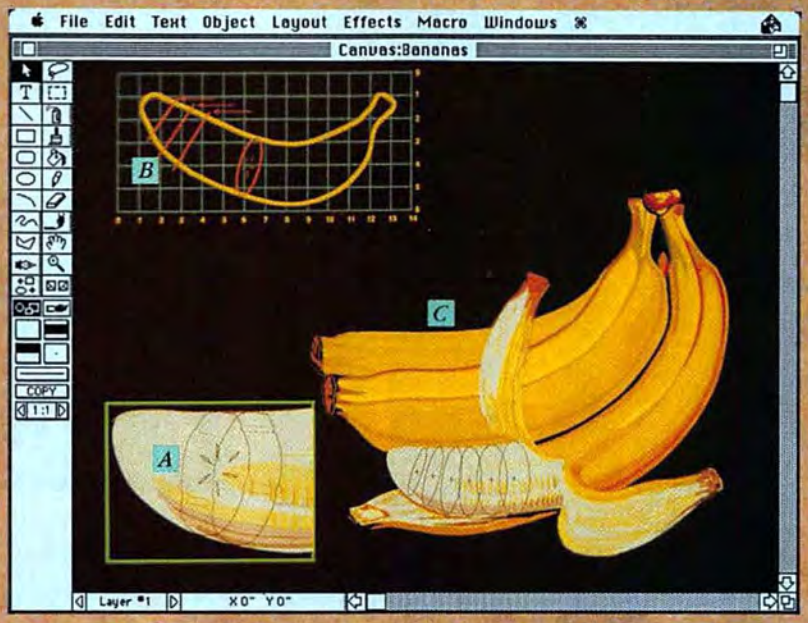
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C Multi-point bezier curves make drawing a bunch easier. Colors are added in layers.

D Auto-resizing helped this V.P. of Sales display the fruits of his labor, graphically.



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A Surge of Excellence



By Frederic E. Davis

For five years, the Macintosh community has delivered excellence in innovation left and right. The key word in that sentence is *community*. Apple has done some insanely great things, but it hasn't done them alone. Credit Apple with the vision but don't forget that those early days were pretty bleak. The first Macs were fine productivity tools, but only if your idea of word processing was limited to eight-page memos embellished with clip art of the footwear of your choice or if your chosen field was swine-farrow management. For a few tense months, those were about the only games in town, Mac-softwarewise.

Dismal days indeed. But then something magical happened: Software developers began crawling out of the woodwork. Microsoft Excel catapulted the Mac to the forefront of spreadsheet technology. Aldus, Adobe, and others created the field of desktop publishing. Third-party wizards brought us the magic of animation. The allure of sound. Outliners. Presentations. And third parties pushed the envelope of the Mac interface to bring user friendliness to productivity applications like telecommunications, financial management, and data storage and analysis. And on the hardware front, we witnessed the coming of age of scanners, printers, mass storage, optical media, networks — well, you get the idea. The third-party community has been busy.

There are two other important elements to the Mac community. First, there's been you: the users, the Macintosh champions, who brought Macs into your homes and workplaces (sometimes literally sneaking them in through the back door). Your feedback — on technical-support phone calls, on registration cards, on BBS threads, in discussions at user group meetings, and by voting with your wallets, one-on-one with your salesperson — has provided an endless source of ideas, constructive criticism, and encouragement to the software and hardware producers. And your skyrocketing numbers have provided an incentive for them to excel.

The Mac community has one more constituent that we shouldn't forget: the competition. Big Blue, NeXT, Sun, Commodore, and others have done their part to make sure that Mac developers stay on their toes.

Choice Choices

It all adds up to an overwhelming universe of choices. Every month, our goal is to steer you toward the products and techniques that best suit your particular needs. And once a year, we award our Editors' Choice Awards — the Eddies — to products that are so outstanding that we think they deserve special recognition. In this issue's roundup of Eddy winners, you'll find 34 products that represent the cream of this year's bumper crop.

One of this year's recipients holds a special place on the roster of winners. CE Software, hardly a newcomer to Eddydom, has given the Mac community plenty to cheer about — including some great shareware and freeware. When viruses first hit the Mac, Don Brown of CE Software was quick to respond with Vaccine. And rather than exploiting the sudden wave of virophobia, he made the product universally available. In a year when our columnists and letter-to-the-editor writers argued about whether shareware was viable in a maturing Mac marketplace, Vaccine sidestepped the debate and provided a measure of antiviral protection to us all.

Caveat Eddy

The Eddies are *MacUser*'s ultimate seal of approval, and many Eddy winners prominently feature their awards in their advertising. While we're delighted that they choose to do so, you should realize exactly what the Eddy does and doesn't signify. The Eddies are awarded for the best *new* product in a *specific* category for a *given* year. So, for example, the candidates for the best new relational database for 1989 aren't in the same category as flat-file managers, and they haven't been weighed against products released in previous years. (Major upgrades of older products *are* considered for each year's awards, though.) Also, don't confuse our award with a similar (but unrelated) award from a European magazine. With these caveats in mind, let Eddy be your guide to the best of the best. (And for a look at the best of the worst, check out the "Shreddy" awards in Scrapbook.)

The NetWorkShop

Networks. In today's multi-Mac environment, you can't live without 'em, but sometimes you can't live with 'em, either. This month, we've got a special package of articles designed to help you tame your network demons and optimize those sometimes-dangerous liaisons. (You'll also find connectivity solutions this month

In this issue's roundup of Eddy winners, you'll find 34 products that represent the cream of this year's bumper crop.

WE PUT PERSONAL SCANNING WITHIN YOUR REACH.

Announcing LightningScan, the new hand-held scanner for Macintosh. From Thunderware.

Now one quick pass is all you need to scan any image up to four inches wide. With resolution settings up to 400 dots per inch, LightningScan™ makes almost any scanning job easier to handle. And because LightningScan is controlled by the software that helped make ThunderScan® famous, you have the powerful tools you need to enhance and edit your images. As for graphics compatibility, you name it: from PageMaker® and Illustrator™ to ImageStudio™ and Digital Darkroom.™

At its suggested retail price of $549, LightningScan makes the benefits of personal scanning very easy to grasp.

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and every month in our new Bridges department.)

But there are a few things you *won't* find in this issue. One of them is E-mail, a vital part of any network. We had planned to review the major E-mail packages. But at press time, *all* of them announced that substantial revisions were imminent. So we've decided to postpone our coverage for a couple of months to give ourselves a chance to evaluate the new versions. (And we'll also take a look at a couple of E-mail newcomers that were recently announced.)

You won't find much discussion of *groupware*, a hot software buzzword these days, either. Why not? Because aside from multiuser databases, there's not much to talk about yet. The promise of groupware — for tasks like organizational scheduling, project management, and multiauthor document creation and editing — is certainly substantial, but the reality is nebulous. We're keeping our eyes on this emerging technology, and you can rest assured that we'll bring you a full report once the first Mac groupware products come in from the vapor.

New Directions

The past year has seen lots of growth and change for *MacUser* and, more personally, for me — and the next year promises even more. Starting next month, I'll be moving on to a new challenge within Ziff-Davis, and *MacUser* will have a new editor-in-chief: Paul Somerson, acclaimed columnist, best-selling computer-book author, and one of the guiding forces behind *PC* and *PC/Computing* magazines, who's convinced that the Mac represents the future of computing. I've enjoyed being a part of your Mac experience and would like to thank the *MacUser* staff and readers for all they've shared with me. Though you won't be hearing from me in this column, I'll still be an active part of the Mac community — but from a different window.

Fred

FREDERIC E. DAVIS
EDITOR-IN-CHIEF



SYMANTEC UTILITIES PROTECTS SMART PEOPLE AGAINST HARD DISK CRASHES THE SAME WAY AIR BAGS PROTECT DUMMIES.

"SUM, or to be more precise, Symantec Utilities for Macintosh, is the slickest and most important set of utilities you can get for your Mac. To have a hard disk and not have SUM is sheer folly."

Steven Bobker, Chief Scientist, MacUser Magazine, 9/88, 5 Mice, Highest Possible Rating

Strong language. But well founded. Because in addition to six other indispensable utilities, SUM features Guardian, the ultimate software for protecting your Mac's hard disk *before* a crash. Like an air bag, Guardian stays out of sight, loading automatically every time you turn on your Mac. It protects invisibly by updating a "map" of your hard disk data. So that, in a crash, your data is safe. Because Guardian uses the "map" to locate it and recover it. In minutes.

SEVEN INDISPENSABLE HARD DISK UTILITIES:
Guardian—protects and restores hard disk data and deleted files. *Disk Clinic*™—easy-to-use troubleshooting interface. Restores hard disk data in case you have a crash before you can install Guardian. *Virus Protection*—protects systems against "viruses." *HD TuneUp*™—optimizes hard disks. *Symantec Tools*—views and edits data and resource forks of a file or volume in HEX or ASCII. *QuickCopy*™—makes fast floppy copies. *HD Partition*—separates hard disks into separate volumes which can be encrypted.

Smart Mac users who want complete, yet effortless protection for their hard disk data should follow Steven Bobker's advice and "Get SUM." Today.

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Come what May.

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Acius ... 30 day MBG

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★Aatrix Software ... 30 day MBG

3976 Aatrix Payroll 3.05 99.
4020 Aatrix TimeMinder 2.0 109.
4021 Aatrix TimeCard 2.0 109.
3958 Aatrix Payroll PLUS 3.02 159.

Bedford Software

4977 Simply Accounting 1.04 219.

★Chang Labs ... 60 day MBG

1613 Rags to Riches Ledger 3.1 119.
1614 Rags to Riches Payables 3.1 119.
1617 Rags to Riches Receivables 3.1 ... 119.
1622 Rags to Riches 3-Pak . *special, see box*
1612 Inventory Control 2.6 239.
1615 Professional Billing 2.9 239.
1616 Professional 3-Pak 359.
1618 Retail Business 3-Pak 359.

Dac Software

4502 Dac-Easy Light 1.0 44.

Informix

4955 Wingz 1.0 275.

★Intuit ... 30 day MBG

2425 Quicken 1.01 33.

★MECA ... 60 day MBG

2796 Managing Your Money 2.0 127.



Microlytics ... 60 day MBG

Electronic WordFinder 220–Holds over 4.5 Meg of information, including 100,000 spelling words and 220,000 synonyms all electronically at your fingertips. Includes four AAA batteries $79.

Monogram

2779 Business Sense 1.01 279.

★Nantucket ... 30 day MBG

2971 McMax *special* 99.

Nolo Press

2981 WillMaker 3.0 34.

★North Edge Software ... 30 day MBG

2986 Timeslips III 1.1 117.

★Satori ... 30 day MBG

3978 Components GL 1.0 389.
3324 Project Billing 1.56 409.
4987 Project Billing + 1.56 589.
3323 Legal Billing II 2.56 539.
4986 Legal Billing II + 2.56 589.

SoftView

3473 TaxView Planner 2.0 64.
3470 MacInTax 1988 65.

★Survivor Software ... 30 day MBG

3289 MacMoney 3.02 61.

NUMBERS & DATABASES

★Abacus Concepts ... 60 day MBG

4482 StatView SE + Graphics 1.03 229.
4481 StatView II 1.03 339.

★Access Technology ... 60 day MBG

1346 Trapeze 2.1 149.

★Acius ... 30 day MBG

1010 4th Dimension 1.0.6 399.
4024 4th Dimension Runtime 1.06 229.

Ashton-Tate

4098 Full Impact 1.0 249.

Blyth Software

4318 Omnis 3 Plus/Express 3.3 399.

Borland International

1508 Reflex Plus 1.01 189.

★BrainPower ... 60 day MBG

1532 DataScan 1.0 118.
1535 DesignScope 1.15 128.
1534 MathView Professional 1.1 139.
1537 StatView 512 + 1.2 175.
3960 ArchiText 1.03 179.
4066 The Analyzer Bundle *(includes DataScan, DesignScope, and StatView 512+)* .. 319.

★Bravo Technologies ... 30 day MBG

1539 MacCalc 1.2D 77.

★Chang Labs ... 60 day MBG

1611 C.A.T. 2.0 229.

Claris

4196 FileMaker II 1.0 $229.
1125 MacProject II 1.0 379.

★Fox Software ... 30 day MBG

4195 FoxBASE + /Mac 1.1 205.
4844 FoxBASE + /Multi-User 315.

Individual Software

4720 101 Macros for Excel 37.

★Microsoft ... 30 day MBG

2866 File 2.0A 129.
2884 Works 2.0 189.
2865 Excel 1.5 255.

Nolo Press

4228 For the Record 1.02 29.

★Odesta ... 30 day MBG

3014 GeoQuery 1.0 199.
4211 DataDesk Professional 2.0 289.
3013 Double Helix II 2.0R51 339.

★Paracomp ... 30 day MBG

4664 Milo 1.0 159.

★Preferred Publishers ... 30 day MBG

4780 DAtabase 1.01 75.

★ProVUE ... 60 day MBG

4582 Panorama 1.1 207.

★Rubicon Publishing ... 60 day MBG

3272 Dinner At Eight-Encore Edition *(CP)* 45.

★Satori ... 30 day MBG

3320 BulkMailer 3.22 79.
3321 BulkMailer Plus 3.22 195.

Software Discoveries

3373 Record Holder Plus 3.0 65.

GRAPHICS & DESIGN

★Aegis Development ... 60 day MBG

4956 Showcase F/X 1.0 205.

★Altsys ... 30 day MBG

4830 KeyMaster 1.0 52.
1194 FONTastic Plus 2.02 52.

Broderbund Software

4065 PosterMaker Plus 2.5B 35.
1427 Print Shop 1.3 35.
4501 Drawing Table 1.0 76.

★Casady & Greene ... 60 day MBG

1575 Fluent Fonts 2.0 27.
4835 Fluent Fonts/SC ITC Garamond 39.

★Challenger ... 30 day MBG

1610 Mac3D 2.1 119.



Paracomp ... 30 day MBG

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Altsys ... 30 day MBG

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Claris

1123 MacPaint II 2.0 99.
1117 MacDraw II 1.0 309.
4815 Smart Form Designer 309.
4814 Claris CAD 629.

Cricket Software

4346 Cricket Paint 1.0 99.
1667 Cricket Draw 1.1.1 168.

★Deneba Software ... 30 day MBG

1769 Canvas 2.0 159.

★DreamMaker ... 60 day MBG

4088 MacGallery *(MacPaint format)* 27.
4840 Cliptures: Business 1 95.
4841 Cliptures: Business 2 95.

Dubl-Click Software

3972 World-Class Fonts! Originals (1-2) . . 45.
3973 World-Class Fonts! The Stylish (3-4). 45.
3974 World-Class Fonts! The Giants (5-6). 45.
3964 WetPaint Classic Clip-Art (1-2) 45.
3965 WetPaint For Publishing (3-4) 45.
3966 WetPaint Animal Kingdom (5-6). . . . 45.
3967 WetPaint Special Occasions (7-8) . . 45.
3968 WetPaint Printer's Helper (9-10). . . . 45.
3969 WetPaint Industrial Revolution (11-12) 45.
3970 WetPaint Old Earth Almanac (13-14) 45.
3971 WetPaint Island Life (15-16) 45.
4940 WetPaint All the People (17-18) 45.

Electronic Arts

4315 Studio/8 1.0 319.

★Enabling Technologies ... 30 day MBG

1871 Pro3D 289.

Enzan-Hoshigumi USA

1879 MacCalligraphy 2.0 99.

★Foundation Publishing ... 60 day MBG

2384 Comic Strip Factory 1.6 42.
2385 Comic People. 24.

★Generic Software ... 60 day MBG

4319 Generic CADD Level 1 1.1. 89.

★Graphsoft ... 30 day MBG

4993 MiniCad+ 519.

★Great Wave ... 30 day MBG

2272 Crystal Paint 1.0 $27.

Innovative Data Design

4710 Residential Construction 1.0 139.
2417 MacDraft 1.2B. 145.
4707 Dreams 1.0 275.

★MacroMind ... 30 day MBG

4953 VideoWorks II 2.0. *special* 150.
4952 VideoWorks II HyperCard Driver 1.2 . . 60.
4954 VideoWorks II Accelerator 1.1 115.

Miles Computing

4847 Mac the Knife Vols. 3,4, & 5 . . . *special* 69.

★Olduvai Software ... 60 day MBG

4667 Art Clips *(formerly Post-Art)* 51.
4850 Art Fonts 1 55.
4851 Art Fonts 2 55.

★Paracomp ... 30 day MBG

4597 Swivel 3D 1.0 249.

★Silicon Beach ... 60 day MBG

3504 Silicon Press 1.1 41.
3506 SuperPaint 2.0 129.
3507 Super3D 1.0. 157.
3980 Digital Darkroom 1.0 157.

★Solutions, Intl. ... 60 day MBG

3446 The Curator 1.05. 75.

★SuperMac Software ... 60 day MBG

3380 PixelPaint 2.0 199.

★Symmetry ... 30 day MBG

4160 PictureBase 1.23-WetPaint Bundle . . . 89.

★Synergy ... 30 day MBG

3129 KaleidaGraph 1.10. 119.

★T/Maker ... 30 day MBG

3633 Christian Images. 35.

★3G Graphics ... 30 day MBG

3942 Images with Impact: Graphics 1 . . . 59.
4583 Images with Impact: Business 1 . . . 69.

★Zedcor ... 60 day MBG

3986 DeskPaint & DeskDraw 2.01 69.



Aegis Development ... 60 day MBG

Showcase F/X 1.0–A feature-packed special effects and animation system for fonts & graphics. Enhance your graphic images with powerful, unique headlines by applying exciting styles to any font $205.

PUBLISHING & PRESENTATIONS

Adobe Systems

1138 The Collector's Edition $79.
4816 The Collector's Edition II 149.
1142 Newsletters/Publishing Pack 1 . . . 255.
4565 Forms and Schedules Pack 2 309.
4566 Presentations Pack 3 309.
1137 Adobe Illustrator '88 1.6 309.



Farallon Computing ... 30 day MBG

Timbuktu Remote–The long-distance version of Farallon's Timbuktu screensharing and file transfer application. Use with PhoneNET or other AppleTalk networks $195.

MacConnection carries the entire Adobe Type Library (volumes 1-82). Listed below are Adobe's newest typefaces at press time.

4577 67 ITC Clearface. 245.
4578 68 Americana. 125.
4579 69 ITC Serif Gothic 182.
4817 70 Century Expanded 95.
4818 71 Serifa 182.
4819 72 Caslon Open Face. 63.
4820 73 Frutiger 245.
4821 74 Centennial 245.
4822 75 Stemple Garamond 125.
4823 76 Weiss 125.
4824 77 Garamond 3 125.
4825 78 Universal News Com/Greek. . . . 95.
4826 79 Avenir 1 182.
4827 80 Avenir 2 182.
4828 81 Bauhaus 125.
4829 82 Antique Olive 125.

Aldus

1330 Freehand 2.0 349.
4751 Persuasion 1.0 389.
1331 PageMaker 3.01 399.

★Altsys ... 30 day MBG

1195 Fontographer 2.4.1 *(CP)*. 229.

Broderbund

4465 DTP Advisor 1.0 47.

940U

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★Casady & Greene ... 60 day MBG
MacConnection carries the entire collection of Fluent Laser Fonts ea. 46.

4839 Vivid Impressions 69.
4838 Quill Pack *(Vol. 8 & 20)* 105.
4836 Headline Pack *(Vol. 10-12)*..... 145.
4837 Modern Pack *(Vol. 7, 14-18)*..... 195.
4834 Distinctive Pack *(Vol. 8, 19-22)*.... 195.
4833 Classic Pack *(Vol. 3-6, & 13)*..... 195.

Cricket Software
1668 Cricket Graph 1.3 115.
1670 Cricket Presents 2.0 289.

Letraset
2621 Ready,Set,Go! 4 4.5 275.
2619 Image Studio 1.5 275.
4709 LetraStudio 1.0..... 289.

★Microsoft ... 30 day MBG
2878 PowerPoint 2.01 255.

Postcraft International
3157 Laser FX 1.6 109.

Quark
4621 QuarkStyle 1.0 199.
3230 Quark XPress 2.0 499.

★Softstream, Inc. ... 60 day MBG
4996 UltraSpec 1.0..... 95.

Springboard
3530 Certificate Maker 2.0..... 24.
4497 Top Honors..... 59.
4500 Springboard Publisher 1.0 109.

★T/Maker ... 30 day MBG
3635 EPS Illustrations 75.

PROGRAMMING & HYPERMEDIA

★Beacon Technology ... 30 day MBG
4967 HyperBible *(King James)* 159.
4968 HyperBible *(New International)* ... 195.

Borland International
1511 Turbo Pascal 1.1..... 68.

★Bright Star Tech. ... 30 day MBG
3962 HyperAnimator 1.5 *(includes Stax, a MacConnection exclusive!)* 99.

★DreamMaker ... 60 day MBG
4115 MacGallery *(HyperCard format)* ... 27.

Ideaform
2418 HyperBook Maker 1.0..... 31.

Individual Software
4719 101 Scripts & Buttons for Hypercard $37.

★Manx Software ... 60 day MBG
4068 Aztec C 3.6B 65.
4317 Aztec SDB 65.
4316 Aztec C UniTools..... 65.
4069 Aztec MPW C 3.6B..... 99.
4075 Aztec C + SDB 3.6B..... 99.

★Microsoft ... 30 day MBG
4471 QuickBasic 1.0..... 65.

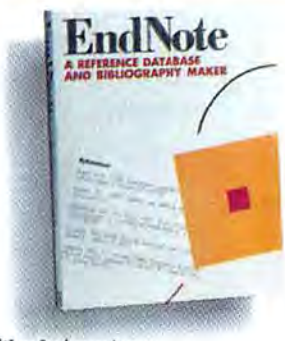
★OWL International ... 30 day MBG
3082 Guide 2.0..... 99.

★SmethersBarnes ... 30 day MBG
1478 Prototyper 2.0..... 149.

Softworks, Inc.
4601 Stack Cleaner..... 29.
4599 HyperTools #1 59.
4600 HyperTools #2 59.

★Symantec ... 30 day MBG
4644 Just Enough Pascal 1.0 49.
3421 Lightspeed Pascal 2.0 85.
3420 Lightspeed C 3.01 call

TENpoint0
1338 Reports! 1.2 69.
4638 Focal Point II 1.0 119.



Niles & Associates
EndNote 1.1.1–Stop typing bibliographies! EndNote will do it for you. Stores 32,000 references. Adds bibliographies to all major word processor documents..... $82.

★TML Systems ... 30 day MBG
3548 TML Source Code Library II 1.1 ... 42.
4989 TML Pascal II 3.0 *(w/o MPW 3.0)*... 59.
3549 TML Pascal II 3.0 *(w/MPW 3.0)* ... 115.

True BASIC, Inc.
3587 True BASIC 2.01 59.

★Zedcor ... 60 day MBG
3985 ZBasic 5.0 99.

UTILITIES

★Affinity Microsystems ... 60 day MBG
1014 Affinifile 1.1..... 46.
1016 Tempo II 1.0 89.

★Berkeley System ... 30 day MBG
1541 Stepping Out II 2.01 52.

Beyond, Inc.
4203 MenuFonts 2.02 29.

★Casady & Greene ... 60 day MBG
2269 QuickDEX 1.4A 32.

★CE Software ... 60 day MBG
1727 CalendarMaker 3.0..... 27.
1728 DiskTop 3.0.4 27.
4689 MockPackage Plus Utilities 4.4 ... $27.
1729 QuicKeys 1.1 53.

Dubl-Click Software
1824 Calculator Construction Set 1.04... 35.

Electronic Arts
1843 Disk Tools Plus 1.01 31.

★Farallon Computing ... 30 day MBG
4684 ScreenRecorder 1.0 135.

★Fifth Generation ... 60 day MBG
4287 Pyro! 3.0 *(screen saver)*..... 15.
3954 PowerStation 2.5..... 32.
3955 Suitcase II 1.2..... 45.
3953 FastBack Mac 1.3..... 54.

★FWB Software ... 30 day MBG
2232 Hard Disk Partition 2.0 41.
4683 Hard Disk DeadBolt 1.0 53.
2231 Hard Disk Util 2.03 53.

★HJC Software ... 30 day MBG
4803 Virex 1.3..... 69.

ICOM Simulations
4084 On Cue 1.3..... 36.

Ideaform
2419 DiskQuick 2.10..... 27.
2420 MacLabeler Plus 3.0..... 42.

★Kent Marsh Ltd. ... 30 day MBG
2591 The NightWatch 1.02 87.
2592 MacSafe 1.08C..... 87.

★Lundeen & Assoc. ... 60 day MBG
2683 WorksPlus Command 2.0..... 57.

MEDIAGENIC
4591 Open It! 1.0 49.

★Microlytics ... 60 day MBG
2732 GOfer 1.0..... 44.

★Microseeds Pub. ... 60 day MBG
4848 INITPicker 29.
4210 Screen Gems 1.0 47.
2913 Redux 1.5..... 59.

★Olduvai Software ... 60 day MBG
4503 MultiClip..... 36.
3031 Icon-It! 1.1 39.
3030 FontShare 1.1..... 149.

★PCPC ... 30 day MBG
3175 HFS Backup 3.0..... 54.

★Solutions, Intl. ... 60 day MBG
3448 SmartScrap & The Clipper 2.0 46.
3449 SuperGlue 1.05 50.

★SuperMac Software ... 60 day MBG
3383 SuperSpool 5.0 54.



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3382 SuperLaserSpool 2.0 $79.
3378 Multi-User SuperLaserSpool 2.0 .. 199.
3377 Diskfit 1.5 54.
3379 Network Diskfit 1.5 199.
3381 Sentinel 2.0 *special* 149.

★Symantec ... 30 day MBG
4728 MacSQZ! 1.05 52.
4729 S.U.M. 1.02 65.

★Symmetry ... 30 day MBG
3318 HyperDA 1.1 35.

★Williams & Macias ... 30 day MBG
3783 myDiskLabeler w/Color 2.9l 31.
3784 myDiskLabeler w/LaserWriter 2.9LI .. 34.
4976 Sticky Business 1.0 99.

Working Software
3788 Findswell 2.0 36.

WORD PROCESSING

★Access Technology ... 60 day MBG
3959 MindWrite 2.1 95.
4109 MindWrite*Express* 2.1 139.

★Aegis Development ... 60 day MBG
1133 Word Tools 1.2 42.

Ashton-Tate
1324 FullWrite 1.0 269.

Claris
1129 MacWrite 5.0 99.



PBI Software
NetTrek–The Real Version–Space battle against the computer or up to five networked users. Color, digitized sounds, fully interactive. Written by Randy Carr. $35.

★Deneba Software ... 30 day MBG
4700 BigThesaurus *(1.4 million words)* .. 54.
1767 Comment 2.0 54.
1768 Coach Professional 3.0A 105.

★Lundeen & Assoc. ... 60 day MBG
2684 WorksPlus Spell 2.0 46.

★Microlytics ... 60 day MBG
2733 Word Finder 2.0 33.
4870 Electronic WordFinder 220 79.

★Microsoft ... 30 day MBG
2885 Write 1.0 79.
2882 Word 4.0 255.



Paracomp ... 30 day MBG
Swivel 3D 1.0–The fastest, top-rated, color drawing and modeling program for the Mac. Innovative linking feature allows you to build realistic 3 dimensional images with naturally moving parts. 5 Mice, March '89 MacUser! $249.

Niles & Associates
4602 EndNote 1.1.1 82.

★Preferred Publishers ... 30 day MBG
4781 Vantage 1.0 59.

★Sensible Software ... 30 day MBG
4692 BookEnds 1.0 53.
3375 Sensible Grammar 1.1D 53.

Software Discoveries
3374 Merge Write 1.0 34.

★Symantec ... 30 day MBG
3422 More II 2.0 255.

★Symmetry ... 30 day MBG
4504 Acta Advantage 1.0 65.

★T/Maker ... 30 day MBG
3639 WriteNow 2.0 *special* 99.

WordPerfect
3800 WordPerfect Mac 1.0.1 179.

Working Software
3792 Spellswell 2.0G 45.
4693 Quick Letter 1.0 75.

MUSIC & EDUCATION

★Ars Nova ... 60 day MBG
1215 Practica Musica 2.1 75.

★Bogas Productions ... 60 day MBG
4255 Super Studio Session 2.0 75.
1461 Studio Session 2.0 49.
1458 Country Disk 15.
1459 Heavy Metal Disk 15.
4832 Sound Effects Disk 15.
1460 String Quartet Disk 15.
4831 Music Disk 4 Pack Special 39.

★Bright Star Tech. ... 30 day MBG
1402 Alphabet Blocks 3.01 32.
3961 Talking Tiles 1.0 69.

Broderbund Software
4314 Type! 1.0 20.
1423 Jam Session 1.1 *(CP)* 30.
1422 Geometry 1.0 *(CP)* 59.
4067 Calculus 1.0 *(CP)* $59.

Coda Music Systems
4367 MacDrums 1.01 *(CP)* 32.
4483 Perceive 1.0 52.

Davidson & Associates
1734 Math Blaster! 1.0 *(CP)* 27.
4978 Speed Reader II 1.0 *(CP)* 36.

Electronic Arts
3941 SmoothTalker 2.0 33.
3939 MathTalk 33.
3935 Speller Bee 33.
4619 Mavis Beacon Typing 1.2B 35.
1846 Deluxe Music Construction Set 2.5 . 85.

★Farallon Computing ... 30 day MBG
2199 MacRecorder 1.1 135.

★Great Wave ... 30 day MBG
2277 TimeMasters 1.0 22.
2276 KidsTime 1.2 26.
2270 American Discovery 2.1 27.
4334 NumberMaze 1.0 27.
2273 ConcertWare+ 4.0 39.
2271 ConcertWare+ MIDI 4.0 79.

Individual Software
4209 Typing Instructor Encore 26.

Learning Company
2670 Reader Rabbit 2.0 *(CP)* 32.

Mindscape
2748 The Perfect Score: SAT 1.0 46.

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4946 Excellerate *(beginner level)* 29.
4852 PageTutor *(beginner level)* 39.
4947 LearnWord *(beginner level)* 39.

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★Spinnaker ... 30 day MBG
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3615 MacEdge II 1.0 *(CP)* 27.
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★Unicorn ... 30 day MBG
3751 Animal Kingdom *(CP)* 27.
3756 Math Wizard *(CP)* 27.

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Access Software
4655 World Class Leader Board Golf 28.
★Accolade ... 30 day MBG
1184 Hardball *(CP)* 23.
4484 Mean 18 *(CP)* 23.
4485 4th and Inches *(CP)* 23.
Activision
4475 Quarterstaff *(CP)* 30.
4486 Manhole 30.
4592 Zork Zero *(CP)* 36.
Broderbund Software
4099 Shufflepuck Cafe *(CP, air hockey)* . . 24.
4111 Moebius *(CP, adventure & arcade)* . 24.
4229 Where is Carmen Sandiego? *(CP)* . . 27.
4965 Auto Duel *(CP)* 27.
4966 SimCity *(CP)* 27.
1421 Ancient Art of War *(CP)* 27.
4540 Ancient Art of War at Sea *(CP)* 27.
Bullseye
1544 Ferrari Grand Prix *(CP)* 32.
4074 P51 Mustang Flight Simulator *(CP)* . . 32.
★Casady & Greene ... 60 day MBG
2268 Crystal Quest 2.2C *(CP)* 26.
4119 Crystal Quest w/Critter Editor 2.2C . . 42.
★Discovery Software ... 30 day MBG
4408 Arkanoid 27.
Electronic Arts
1850 Reach for the Stars *(CP)* 26.
1842 Chessmaster 2000 *(CP)* 28.
4064 Chuck Yeager Flight Simulator *(CP)* . 32.
4588 Life & Death *(CP, surgery simulation)* . 32.
4945 The Hunt for Red October *(CP)* 32.
4981 Starfleet 1: The War Begins 36.
Epyx
2037 Sub Battle Simulator 29.
4660 Sub Battle Simulator for Mac II 29.



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MacCalc 1.2D–Faster than any other spreadsheet! Features include: Pre-defined formula tables; cell-by-cell font, size & style control; and reads/writes WKS files. 1986 MacUser Eddy Award "Top Spreadsheet of the Year". . . . $77.

Infinity Software
2518 GO $27.
2519 Grand Slam Tennis 27.
Micro Sports
2787 MSFL Pro League Football 32.
MicroProse
4697 Pirates! *(CP)* 32.
★Microsoft ... 30 day MBG
2868 Flight Simulator *(CP)* 33.
Miles Computing
2767 Harrier Strike Mission II *(CP)* *special* 27.
2765 Fool's Errand *(CP)* *special* 27.
Mindscape
4083 Balance of Power 1990 *(CP)* 30.
3987 Colony *(CP)* 30.
4596 Deja Vu II *(CP)* 30.
2749 Shadowgate *(CP)* 30.
PBI Software
3110 Strategic Conquest Plus 2.0 *(CP)* . . . 35.
4985 NetTrek—The Real Version 35.
PCAI
3144 MacGolf 2.0 *(CP)* 35.
4320 MacGolf Classic *(CP)* 54.
4321 Racter *(CP)* 34.
4517 Road Racer *(CP)* 39.



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3169 Smash Hit Racquetball II 21.
Sierra On-Line
3397 Leisure Suit Larry *(CP)* 23.
3396 King's Quest III *(CP)* 29.
3398 Police Quest *(CP)* 29.
3400 Space Quest II *(CP)* 29.
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3501 Apache Strike 27.
3503 Dark Castle 27.
3502 Beyond Dark Castle 27.
3508 World Builder 41.
★Simon & Schuster ... 60 day MBG
3303 Star Trek Kobayashi Alternative *(CP)* 24.
3304 Star Trek Promethian Prophecy *(CP)* 15.
Sir-Tech
3347 Mac Wizardry *(CP)* 35.
★Softstream, Inc. ... 60 day MBG
4071 Mac•Man *(w/adapter)* 24.
4072 The Solitaire DA 24.
4073 Colour Billiards 35.
4078 Game Pak *(above 3 titles)* 75.
4995 Cribbage Tutor 27.



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C.A.T. 2.0–A lightning-fast relational database for managing your contacts, tracking facts, figures, events, projects, writing letters, and performing mailmerges. $229.

★Spectrum Holobyte ... 30 day MBG
4175 Solitaire Royale *(for Mac SE)* 20.
3464 Tetris 20.
4472 Tetris *(color version)* 24.
3460 GATO 26.
3462 PT-109 26.
3459 Falcon 2.0 32.
★Spinnaker ... 30 day MBG
2328 Sargon IV *(CP)* 29.
Springboard
4988 Hidden Agenda 36.
★SubLogic ... 60 day MBG
4698 Jet *(CP)* 32.

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★Abaton ... 30 day MBG
4589 InterFAX Modem 325.
★CE Software ... 60 day MBG
3963 QuickMail 1.05 159.
★CompuServe ... 60 day MBG
1676 CompuServe Information Service . . 24.
1673 CompuServe Navigator 2.02 45.
1674 Standard Service/Navigator Bundle 59.
★DataViz ... 60 day MBG
1823 MacLink Plus 3.0 139.
4842 MacLink Plus/Translators 119.
★Dove Computer ... 60 day MBG
4939 FastNet III 450.
4938 FastNet SE 450.
4937 FastNet SCSI 925.
★Dow Jones ... 30 day MBG
1789 Dow Jones Membership Kit 24.
1785 Desktop Express 1.03 95.
1786 Market Manager Plus 2.0 189.
★Farallon Computing ... 30 day MBG
4208 Timbuktu 2.0.1 65.
4866 Timbuktu Remote 195.
4867 Timbuktu 30-Pack 1395.
2201 TrafficWatch 1.08 139.
2202 PhoneNET-AppleTalk 120 adapter . . . 9.
2203 PhoneNET PLUS *(DIN-8)* 35.
2204 PhoneNET PLUS *(DB-9)* 35.
2205 PhoneNET Punch Down Block 69.
4869 PhoneNET Connector 10-Pack . . . 225.
4868 PhoneNET Repeater 325.
2206 PhoneNET StarController 1199.



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Dear MacConnection,

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I needed a diversion. I wanted a game.

I decided on "Where in the World is Carmen Sandiego?" I wished I had it right then.

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S. Kochendorfer

Sally Kochendorfer, Ph.D.
Davidson, NC

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Just for the record, all the ads in this series feature real live MacConnection customers and the real live letters they wrote us. Really!

where you see stars.

★PCPC ... 30 day MBG

3177 HD-WSI *(Apple HD-20 to SCSI)* . . $269.
3181 MacBottom HD 21 SCSI 659.
3185 MacBottom HD 32 SCSI 699.
3189 MacBottom HD 45 SCSI 859.
3190 MacBottom HD 70 SCSI 999.
4658 MacBottom HD 84 SCSI 1249.

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3297 **Sony** 3½" DS/DD Disks 18.
3772 **Verbatim** 3½" DS/DD Disks 19.
2214 **Fuji** 3½" DS/DD Disks 19.
2792 **MAXELL** 3½" DS/DD Disks 19.

3298 **Sony** 3½" HD Disks *(1.44 Meg)* . . . 47.
3773 **Verbatim** 3½" HD Disks *(1.44 Meg)* . 47.
2215 **Fuji** 3½" HD Disks *(1.44 Meg)* 49.
2793 **MAXELL** 3½" HD Disks *(1.44 Meg)* 49.

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★Avery ... 60 day MBG

4864 3½" Disk Labels *(Qty. 250)* 13.
4865 3½" x 15/16" Address Labels *(Qty 3750)* 15.
4811 8½" x 11" Transparencies *(Qty. 50)* 22.

Bantam Publishing

1403 Complete HyperCard Handbook . . 23.

★Computer Coverup ... 60 day MBG

1723 ImageWriter II Cover 8.
1722 ImageWriter LQ Cover 8.
1725 Mac SE Ext. Keyboard Cover Set . . 10.
4657 LaserWriter II Cover. 10.

★Ergotron ... 60 day MBG

2004 Mouse Cleaner 360° 15.
3992 The Muzzle *(covers power outlet)* . . 62.
2000 MacTilt SE 68.

★Goldstein & Blair ... 30 day MBG

2267 *The Macintosh Bible* (2nd Edition). . 20.

★I/O Design ... 30 day MBG

2378 MacLuggage HDware 49.
2379 MacLuggage Imageware II. 49.
2376 MacLuggage Macinware Plus 64.
2381 MacLuggage Macinware SE. 75.

Kalmar Designs

2531 Teakwood Roll-top Case *(holds 45 disks)* 14.
2532 Teakwood Roll-top Case *(holds 90 disks)* 21.
2533 Teakwood Roll-top Case *(holds 135 disks)* 31.



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★Kensington ... 30 day MBG

MacConnection carries the entire line of Kensington's accessories. Partial listing below.

2577 Mouseway *(mouse pad)* $8.
4126 LaserWriter II Cover. 17.
2589 Universal Printer Stand 15.
4997 Space Saving Printer Stand. 17.
2545 Universal Copy Stand. 22.
4970 Modem/FAX Protector 10 15.
4971 Modem/FAX Protector 20 25.
4972 Power Tree 10 *(good)* 19.
4973 Power Tree 20 *(better)* 29.
4974 Power Tree 50 *(best)* 59.
2556 Maccessories Anti-Glare Filter. 33.
2559 Apple Security System 34.
2568 Maccessories SuperBase 34.
2585 Printer Muffler 80 43.
2586 Printer Muffler 80 Stand 24.
2583 Printer Muffler 132 58.
2584 Printer Muffler 132 Stand 24.
4070 System Saver SE. 52.



PCPC ... 30 day MBG

MacBottom–Rated 4½ Mice in April '89 MacUser. These high performance hard drives are formatted & ready to plug in. Includes spooler, back-up, & other utilities. See line listing for prices.

2566 System Saver Mac *(platinum)* 64.
2546 Maccessories A-B Box 64.
4941 Mac II Monitor Stand. 65.
4643 Mac II Stand and Cable Kit 65.
2561 MasterPiece Mac II 105.
Large Screen Anti-Glare Filters call

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★Mobius Technologies ... 60 day MBG

4470 Fanny Mac QT 60.

★Moustrak ... 60 day MBG

2694 Moustrak Pad *(standard 7"x9")* 8.
2692 Moustrak Pad *(large 9"x11")* 9.
2693 Moustrak Pad L/F *(9"x11")* 10.
Moustrak Designer Series ea. 12.

Ribbons

3255 ImageWriter II Ribbon. 4.
3261 ImageWriter II 4-color Ribbon 9.
3270 ImageWriter II Rainbow Six Pack. . . 20.
3260 ImageWriter LQ Black Ribbon. 17.

★Simon & Schuster ... 60 day MBG

4230 *The Fully Powered Mac* book 24.

★Sopris Softworks ... 60 day MBG

4016 MacPlus Cover *(navy)* 15.



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4171 Mac SE Std. Keyboard Cover *(navy)* . . 15.
4019 Mac SE & Ext. Keyboard Cover *(navy)* . 15.
4017 ImageWriter II Cover *(navy)* 11.
4168 ImageWriter LQ Cover *(navy)* 13.
4018 LaserWriter II Cover *(navy)*. 17.
4012 High Trek ImageWriter II carry case. 49.
4013 High Trek Mac Plus carry case 59.
4014 High Trek Mac SE & ext. kybd. case 69.

★Targus ... 60 day MBG

3618 ImageWriter II Carry Case. 49.
3617 Mac Plus/SE Carry Case. 59.
4015 Mac SE & Ext. Kybd. Carry Case . . 75.

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2307 Smartmodem 2400. 449.
Insignia Solutions
4089 SoftPC 1.3 249.
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4975 LaCie Utilities 1.0 *(Includes SilverLining, SilverPlatter, and SilverServer)* 89.
★**Lamir ... 30 day MBG**
4984 Acknowledge 1.0 329.
★**Microsoft ... 30 day MBG**
2875 Microsoft Mail 1.36 (1-4 users). ... 195.
2872 Microsoft Mail 1.36 (5-10 users). .. 325.
★**Nuvotech ... 60 day MBG**
3000 TurboNet ST *(DIN-8)* 30.
3001 TurboNet ST *(DB-9)*. 30.
★**Practical Peripherals ... 30 day MBG**
3100 1200 Baud External Modem 77.
3102 2400 Baud External Modem 179.
3089 Mac Communications Pack 225.
★**Shiva ... 30 day MBG**
3444 NetSerial X232 289.
4347 NetBridge. 349.
4942 TeleBridge 349.
3443 NetModem V2400 479.
★**Software Ventures ... 30 day MBG**
3454 Microphone 1.5. 119.
3455 Microphone II 2.0 225.
★**Solutions, Intl. ... 60 day MBG**
4308 BackFAX *(reqs. Apple FAX modem)*. 127.
★**Synergy ... 30 day MBG**
3130 VersaTerm 3.20. 65.
3131 VersaTerm-PRO 3.0. 189.
★**TOPS ... 30 day MBG**
3723 TOPS Mac 2.1. 149.
3726 TOPS for DOS 2.1 119.
3724 NetPrint 2.0. 119.
4715 InBox Connection Mac 2.2 75.
4714 InBox Starter Kit 2.2 199.
4189 TOPS Teleconnector *(DIN-8)* 39.
4188 TOPS Teleconnector *(DB-9)*. 39.
4598 TOPS FlashBox. 125.
3725 TOPS Repeater. 129.
3720 TOPS Flashcard 169.
★**Traveling Software ... 60 day MBG**
3729 LAP-LINK Mac 2.0 83.



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3988 CE 105ADB Keyboard w/QuicKeys . 145.
★**Datadesk ... 30 day MBG**
1819 MAC-101 Keyboard *(beige)*. 145.
1820 MAC-101 Keyboard *(platinum)* ... 145.
1821 MAC-101 Keyboard *(ADB)*. 145.
★**Ex Machina ... 30 day MBG**
4843 WristMac 149.
★**Kensington ... 30 day MBG**
2576 New Turbo Mouse for Mac Plus... 109.
2547 New Turbo Mouse ADB. 109.
Koala
2593 MacVision 2.0 219.
★**Kraft Systems ... 60 day MBG**
2600 3-Button QuickStick 39.
4082 3-Button QuickStick ADB 51.



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2605 Cordless 4 Button Cursor 65.
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★**Mobius Technologies ... 60 day MBG**
4846 MultiScreen 349.
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2808 A+ Mouse 65.
2809 A+ Mouse ADB 85.
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2992 15" Monitor for Mac Plus call
2994 15" Monitor for Mac SE ...*special* 999.
2993 15" Monitor for Mac II*special* 999.
4002 19" Monitor for Mac Plus. 1349.
4096 19" Monitor for Mac SE. 1349.
4097 19" Monitor for Mac II 1449.
4849 LCD Interface *(Kodak DataShow)* . 399.
Olduvai Software
3035 Read-It!TS 1.06 79.
3034 Read-It! Personal 2.0 249.
★**Orange Micro ... 30 day MBG**
4488 Grappler Spooler 39.
3036 Grappler C/Mac/GS 79.



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4076 Grappler LQ $103.
4487 Grappler LS call
★**PTI/DataShield ... 30 day MBG**
4845 MacDirector 115.
SoftStyle
3282 Printworks (Dot Matrix) 3.5 43.
3283 Printworks (HP laser) 3.6. 85.
Summagraphics
4298 BitPad Plus ADB. 325.
★**Thunderware ... 30 day MBG**
3648 ThunderScan 5.0 with PowerPort . 189.
4994 LightningScan 409.
3646 MacPlus/SE Power Accessory 29.
3645 Mac II Power Accessory 42.

MEMORY & DRIVES

1107 **1 Meg SIMMs** call
AST Research
4666 Mac 86. 429.
1229 Mac 286. 1079.
★**Cutting Edge ... 30 day MBG**
3989 800k External Disk Drive. 175.
3990 The Wedge XL 30 + SCSI. 559.
3991 The Wedge XL 45 + SCSI. 689.
★**Dove Computer ... 60 day MBG**
1801 SCSI Interface/Port 109.
1807 MacSnap 524E. 289.
1809 MacSnap 524S. 379.
1811 MacSnap 548. 499.
1812 MacSnap 548S. 589.
1800 MacSnap 2SE 439.
1797 MacSnap Plus 2 439.
1804 MacSnap 2S. 649.
1805 MacSnap 4S. 1285.
1793 MaraThon 020 MSE1 585.
1794 MaraThon 020 MSE2 *(1 Meg)*. ... 979.
1795 MaraThon 020 MSE3 *(math chip)* . 779.
1796 MaraThon 020 MSE4 *(1 Meg/chip)* 1159.
4231 MaraThon 020 MSE4x4 2095.
4663 MaraThon 030 Accelerator 32 Mhz . 999.
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4983 Maxcie Internal Drive Kit 59.
(with Epson 40 Meg, 25ms). 509.
(with Epson 70 Meg, 25ms). 659.
4982 Maxcie External Drive Kit 189.
(with Epson 40 Meg, 25ms). 625.
(with Epson 70 Meg, 25ms). 775.

Letters

Simon Edkins of Upper Darby, Pa., enjoyed Louise Kohl's January '89 column, and "not just because of the references to science fiction literature. I suspect that she, like me, mentally winces every time she hears, reads, or is obliged to use that silly, arrogant phrase artificial intelligence. *Years ago, I wrote a term paper for a graduate course in neuropsychology in which I coined the term* extrabiological intelligence; *a machine possessing this kind of intelligence would be called an* e-b brain. *Alas, as a class assignment, the paper was never published and so my coinage went unseen by anyone but the professor."* MacUser *is proud to introduce these two new pieces of jargon into the literature. Send your comments and coinages to* MacUser, *950 Tower Lane, 18th floor, Foster City, CA 94404. All letters become the property of* MacUser, *and we reserve the right to edit any letters we print.*

HIERARCHY ANARCHY

I'm a not-entirely-satisfied WordPerfect user who agrees with most of Charles Spezzano's WordPerfect review ("Something Less Than Perfect," February '89). But his objections to WordPerfect's hierarchical menus constitute barking up the wrong tree. That contribution to the human interface comes from Apple. WordPerfect improves on the Apple-supplied tool in that if you release the mouse while on the main menu item, the submenu reappears at the top of the screen under the menu header, where its items can be selected by a keystroke (the reborn submenu has numbered items) or with a mouse click. Combine this with the liberal use of Command-key equivalents, and you end up with a very slick and usable user interface.

EDWARD NUTTER
SAN DIEGO, CALIF.



CLAUSE AND EFFECT

In the March '89 article "Interactive Multimedia: Discovery by Design," you explain the illustration of the trout in the milk with a statement that A causes B, which in turn causes C. Could you please offer a fuller explanation? Also, is a poster-sized copy of this illustration available?

MICHAEL L. STELLPFLUG
MADISON, WIS.

Many readers [and editors — Ed.] *have expressed curiosity regarding the connection between multimedia and a trout in the milk. The reference is to a well-known quote of 1854 (at least it is well known to me) that goes as follows: "Some circumstantial evidence is very strong, as when you find a trout in the milk." I would also remind you that while you can take a trout out of the milk, you can't take the milk out of a trout.*

As for the assertion that A causes B, which in turn causes C — well, you've got me there. I retract that. We were under deadline pressure.

Alas, there is no poster. However, there is a disk. And from this disk you will learn which well-known personage (at least well known to me) was responsible for having concocted the trout-in-milk enigma in the first place. For details on ordering the disk version of "Discovery by Design," send a self-addressed, stamped envelope to Kristi Coale, c/o MacUser, *950 Tower Lane, 18th floor, Foster City, CA 94404.* — JJA

D-D-D-DOS FOR ALL, FOLKS!

I have a Mac Plus and need to run DOS software rather than just read it. In your February '89 Labs Brief on SoftPC, you mention that AST Research and PerfecTEK Corp. have hardware solutions for running DOS software on a Mac. Are there any products that can give my Mac Plus this capability?

STEVEN M. ZAPILER
DENVER, COLO.

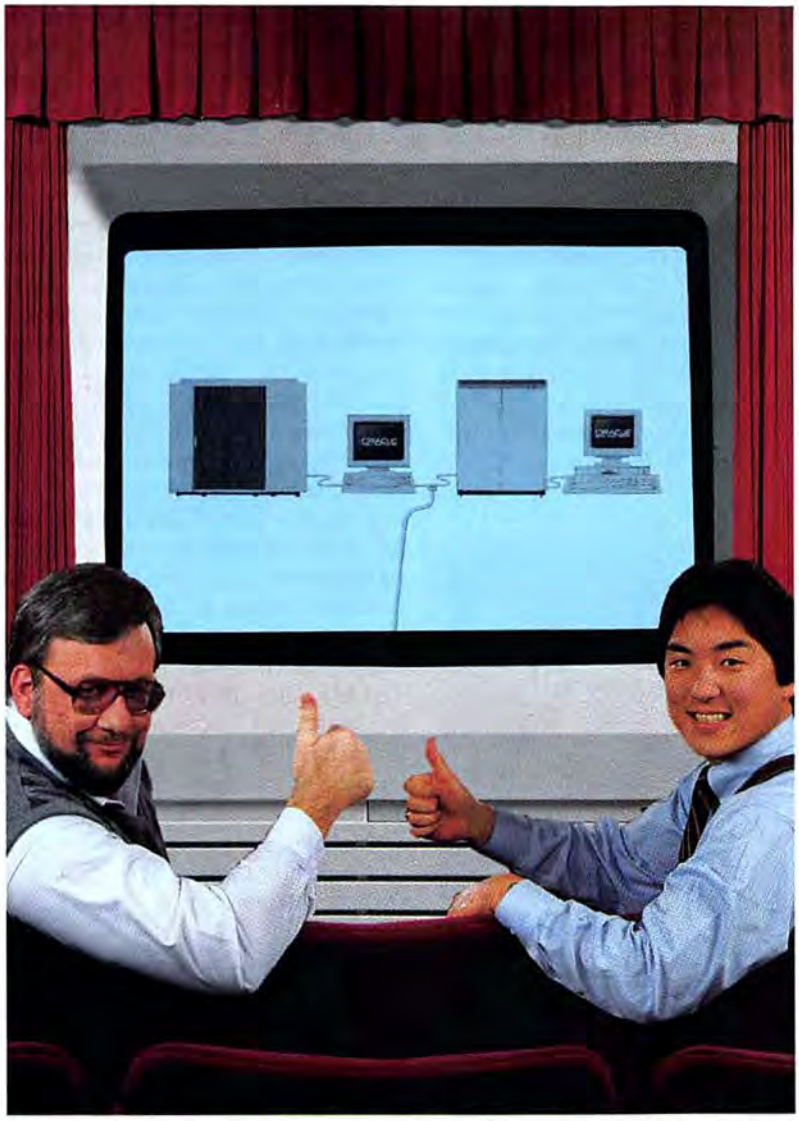
Unfortunately, I am not aware of any DOS boards for the Plus. You could add an accelerator board that contains a 32-bit 68020 processor and add a megabyte of RAM, which would enable you to run SoftPC. Check the "MiniFinders" section and the February '89 MacUser Labs report "Maximum G-Force" for a list of boards that use the 68020 chip. In addition to being able to run DOS, you will notice significant performance improvements on normal Mac tasks. You can also reach AST at (714) 863-1333 and PerfecTEK at (408) 263-7757. — JR

SEPARATION ANXIETY

After reading "From the Desktop" in your March '89 DTP section, I tried your method of producing pages with PageMaker 3.0 and Adobe Separator 2.0. My page contained four boxes using PageMaker's coloring system, plus a color logo created in Adobe Illustrator 88. The file was saved as an Encapsulated PostScript Format

"Two thumbs up!" ORACLE for Macintosh. For only $199 until May 31.*

LIMITED TIME OFFER: Purchase ORACLE for Macintosh Networking Version and receive ORACLE for 4th DIMENSION FREE!



"I like the seamless way ORACLE gives HyperCard full-power database and networking capabilities. Teaming the total flexibility of HyperCard with the strength of SQL is a masterstroke!"
Dan Shafer, *Author of Hypertalk Programming*

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Guy Kawasaki, *President of ACIUS, developers of 4th DIMENSION*

Finally, there's one thing these two guys can agree on: ORACLE® for Macintosh. That's because ORACLE for Macintosh now turns both HyperCard and 4th DIMENSION into full-function SQL databases. It also gives them transparent connectivity to over 80 different systems, including PCs, DEC VAXs and IBM mainframes—even IBM DB2 and SQL/DS databases.

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Letters

(EPSF) file and was separated using Separator. The logo separated, but the four PageMaker boxes did not. Why don't you use something like QuarkXPress that can separate color EPSF files?

LANE REEDER
TALLAHASSEE, FLA.

Oops. We omitted an important caveat in our discussion of color separations and PageMaker. We chose PageMaker because its interface is the closest to traditional pasteup techniques. While QuarkXPress is touted for its color-separation abilities, in reality it can only separate process colors created within the program or EPSF files imported from Illustrator 88 (see "Change of XPression," January '89). PageMaker's new Color Extension (see this month's DTP department) will close the gap between the two programs and will separate all EPSF files. More details and tips will be in next month's installment of DTP. — AA



BERNE, BABY, BERNE

As a developer for GreenLight Software, I was pleased to read Kristi Coale's straightforward summary of linguistic localization and options for foreign marketing ("Multilingual Mac," February '89). As a copyright and computer law attorney, I was also pleased that the article attempted to deal with the complexities of international copyright protection. However, your sidebar on "The Berne Convention" was full of bugs.

The Berne Convention and moral rights have nothing to do with a signing nation's "moral obligation to observe Berne's copyright laws." The Berne Convention is an international agreement that signing countries will treat foreign copyright owners no worse than they treat nationals.

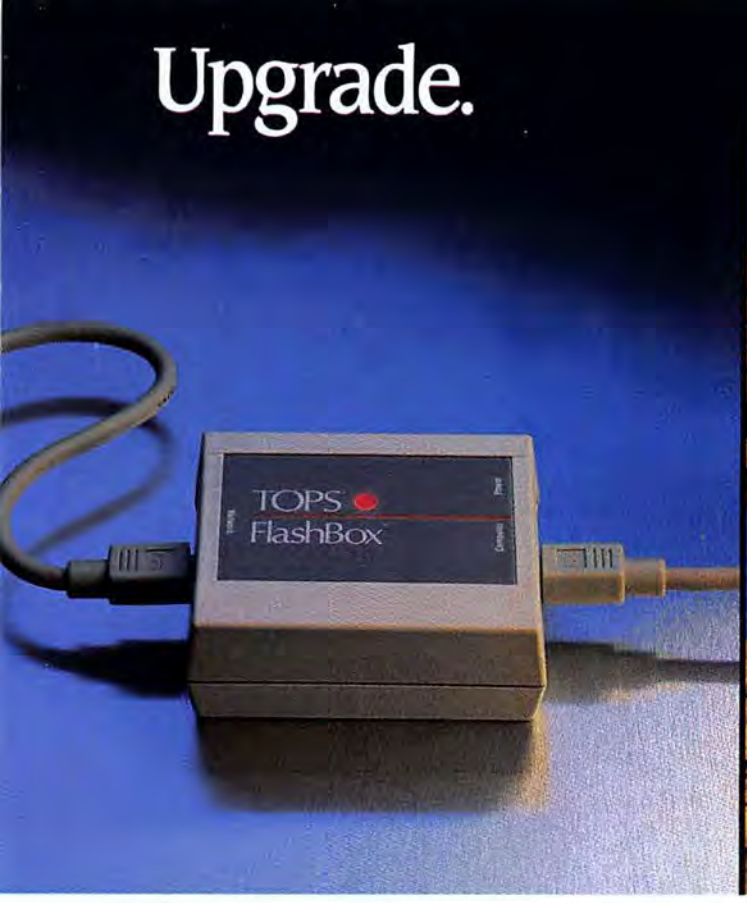
Moral rights are distinguished from economic rights. In the U.S., we are familiar with the economic copyright rights: the right to reproduce, to prepare derivative works, to distribute, publicly perform, and display a copyrighted work. These rights may be licensed or sold. Thus, one can retain a copyright in the original U.S. edition of Oobleck software and license a French company to localize the software and translate the documentation for sale in French-speaking countries. Moral rights, on the other hand, cannot be transferred; they are personal to the human author. Moral rights include paternity, the author's right to have his or her name associated with the work, and integrity, the right not to have the work changed by others.

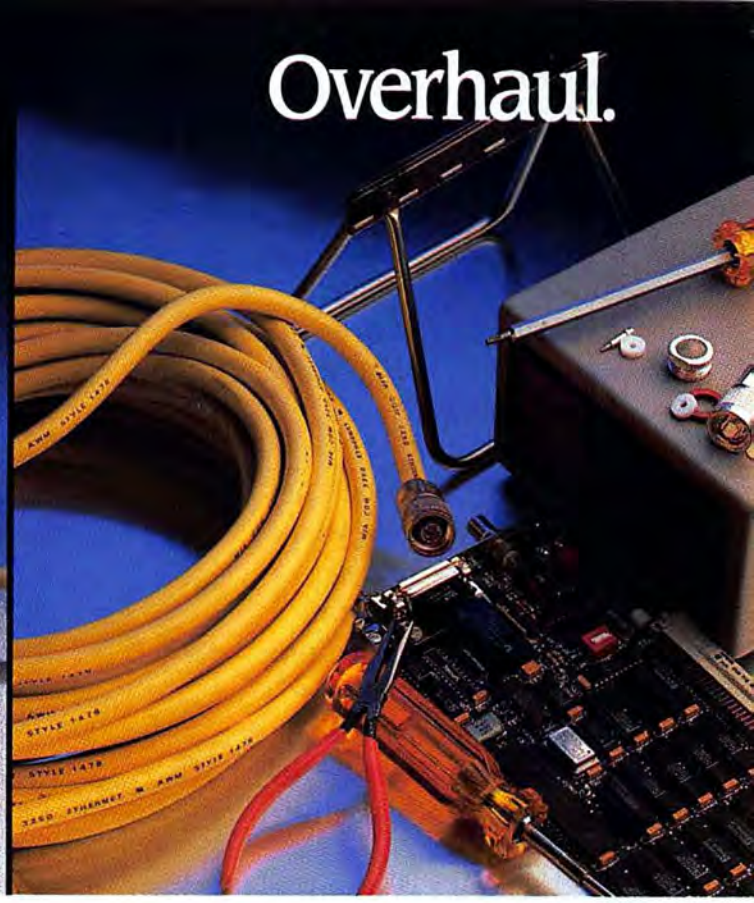
Copyright law differs in each country. Some countries have strong moral rights, some tepid, some none. Eight countries belong to Berne, and even among the Berne nations, the extent of moral right protection differs greatly. The U.S. just voted to join Berne, effective March '89. Congress declared that the U.S. has sufficient moral rights. In addition to the moral rights discussed in Berne, the U.S. is infusing its trade policy with increasing respect for intellectual property.

DANIEL KEGAN
CHICAGO, ILL.

POLY WANT A WRAPPER?

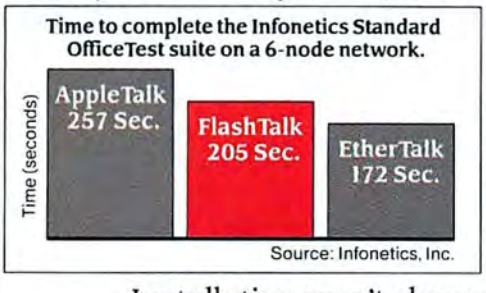
I write books, I write long letters to friends, I even write poems; I never write letters to the editor. But your announcement in your February '89 Letters column impelled me to write. Thank you for deciding to discontinue the plastic mailing bags. I hate the fact that we smother our landscape with plastic mailers, plastic bags, and millions of tons of other nonbiodegradable plastic trash each year. I would much rather have my issues of *MacUser* arrive looking a little ratty than have you use the plastic mailers. I only wish that





How to give Ethernet a run for the money.

Some people may think the way to rev up a LocalTalk network is to rip the whole thing out, lay some heavy cable, and send your computers out for an Ethernet implant. Spending big bucks in the process.



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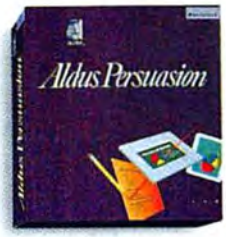
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Actual performance of your network may vary depending on the quality and length of network cable, network size and configuration. To achieve best performance, you should connect a FlashBox to each Macintosh. Using FlashBox with bridges, gateways, or other AppleTalk-only devices may require network reconfiguration or the addition of repeating devices.

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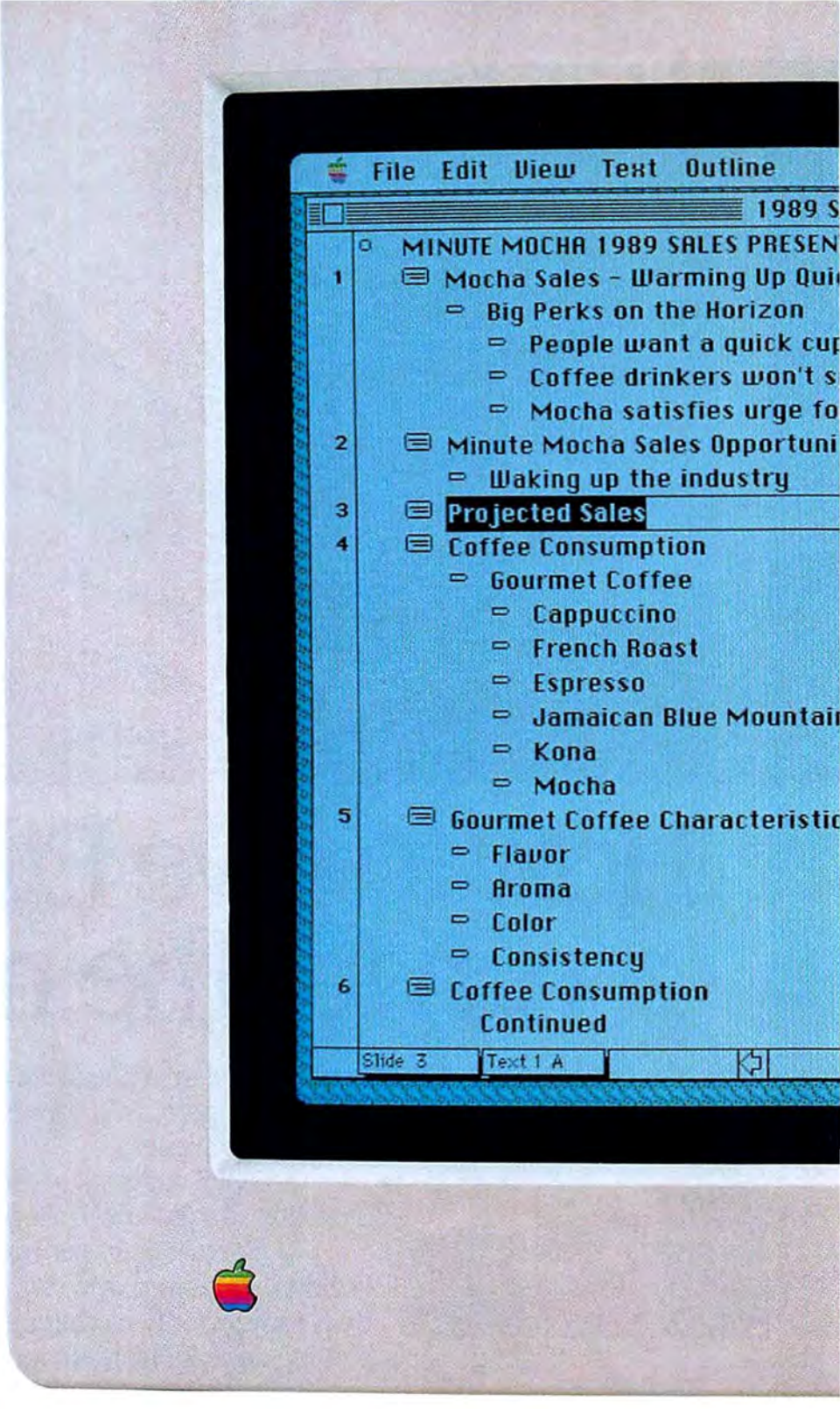
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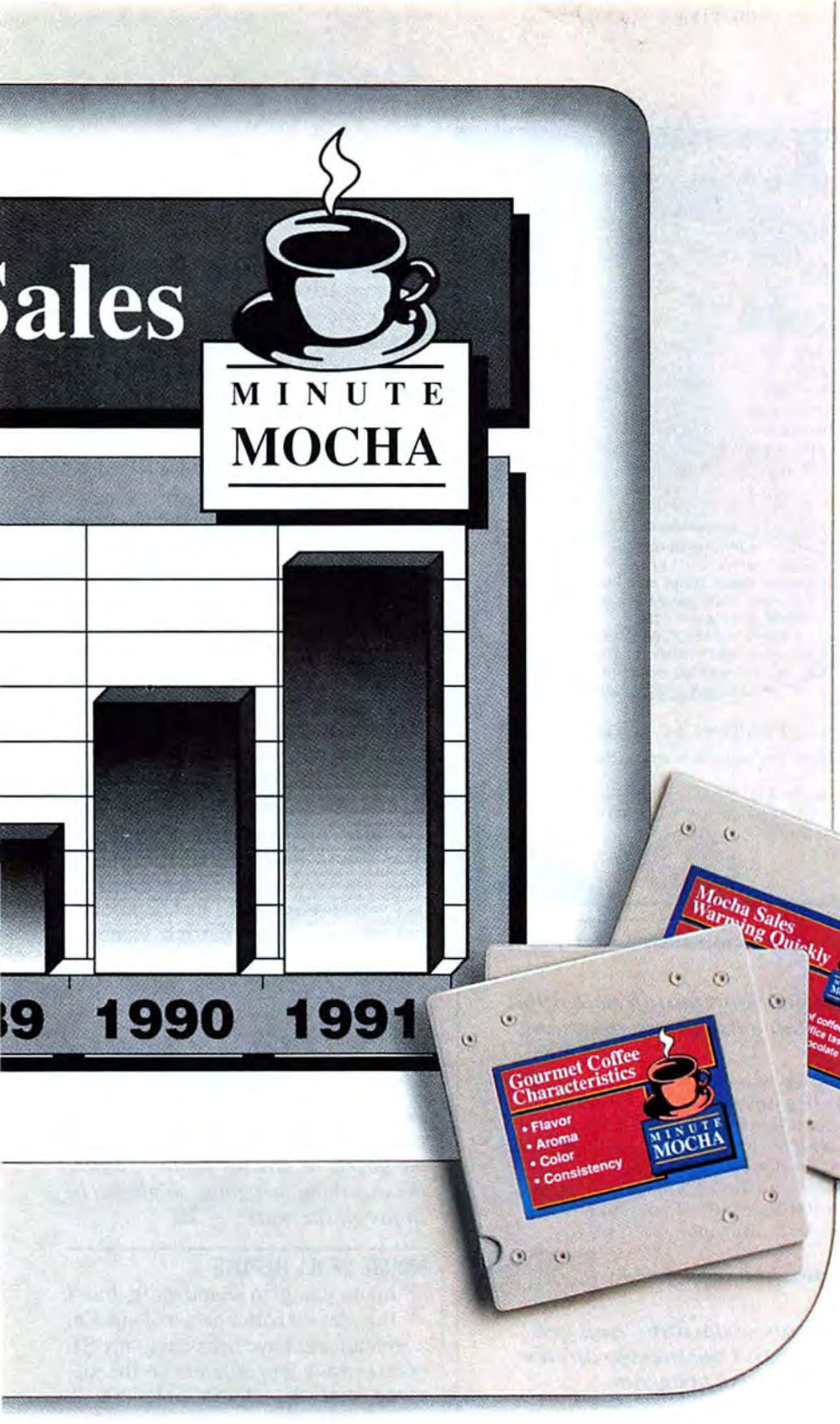
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No wonder the reviewers are applauding Persuasion. According to *InfoWorld*, "This may be the product that does for desktop presentations what PageMaker did for desktop publishing." In its 12/88 Macintosh Ratings Report, *Software Digest* says, "Persuasion provides the best balance of features, usability, and performance to meet the needs of most users."



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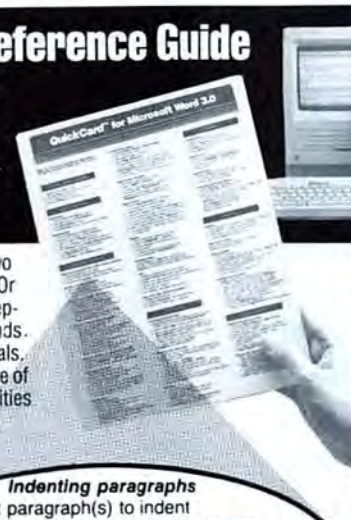
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"x" means all versions

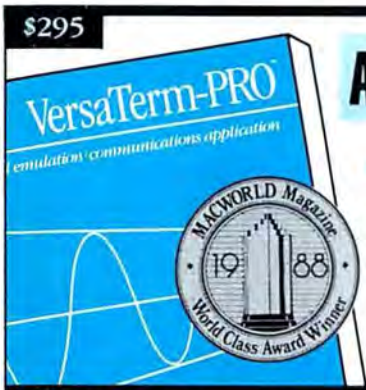
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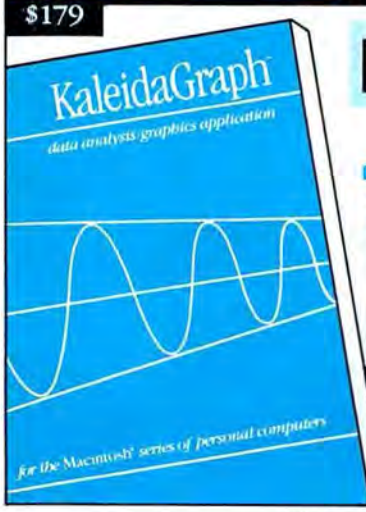


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Letters

other magazines (notably conservation magazines, like *Audubon*) would follow your lead.

Also, next time you redesign the magazine, please use more white space and fewer colors and other design elements. The current design is something along the lines of "Adobe School of Frenetic" (see the recent Adobe Type Catalog, for example). Finally, thanks for giving Louise Kohl her own column. I was getting tired of the preponderance of male voices.

SUSAN J. TWEIT
AMES, IOWA

SLEAZEWARE ADS, PART XIII

In the last paragraph of his letter, Virgil Bowden (January '89) states that it is your job to make judgments on our behalf. He could not be further from the truth. He says that you "pass the buck" by forcing your readers to draw the line (regarding adult software and ads) where you won't.

I would never order such a product, but to paraphrase Patrick Henry, I would — if necessary — defend to the death your right to advertise it.

MICHAEL STEINER
SIERRA VISTA, ARIZ.

That's a paraphrase of a translation of a paraphrase of something Voltaire wrote. Patrick Henry said, "Give me liberty or give me death!", which, the way things are going, might not be so far off the mark. — JB

MOUSE OF ILL REPUTE

This is going to sound nuts, but I thought I'd better pass it along. I'm a woman and have been using my SE progressively longer hours on the job, to the point where I now sometimes do 8 to 10 hours at a stretch.

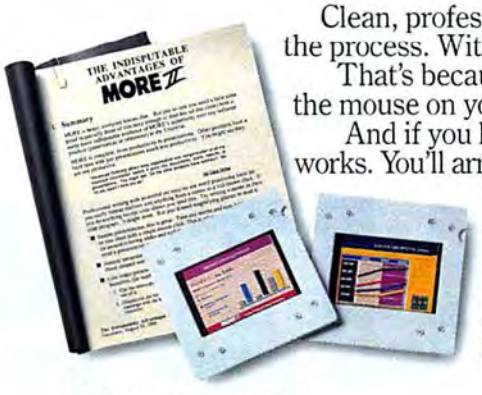
Last time I went in for my physical, I was sent for a mammogram because my right breast was suspicious. But over the past three months the doctor has decided that there's nothing major to worry about because — get this — my mouse is responsible. The doctor told me to work with my elbow and wrist elevated as high as was comfortable, but I've chosen to switch hands.

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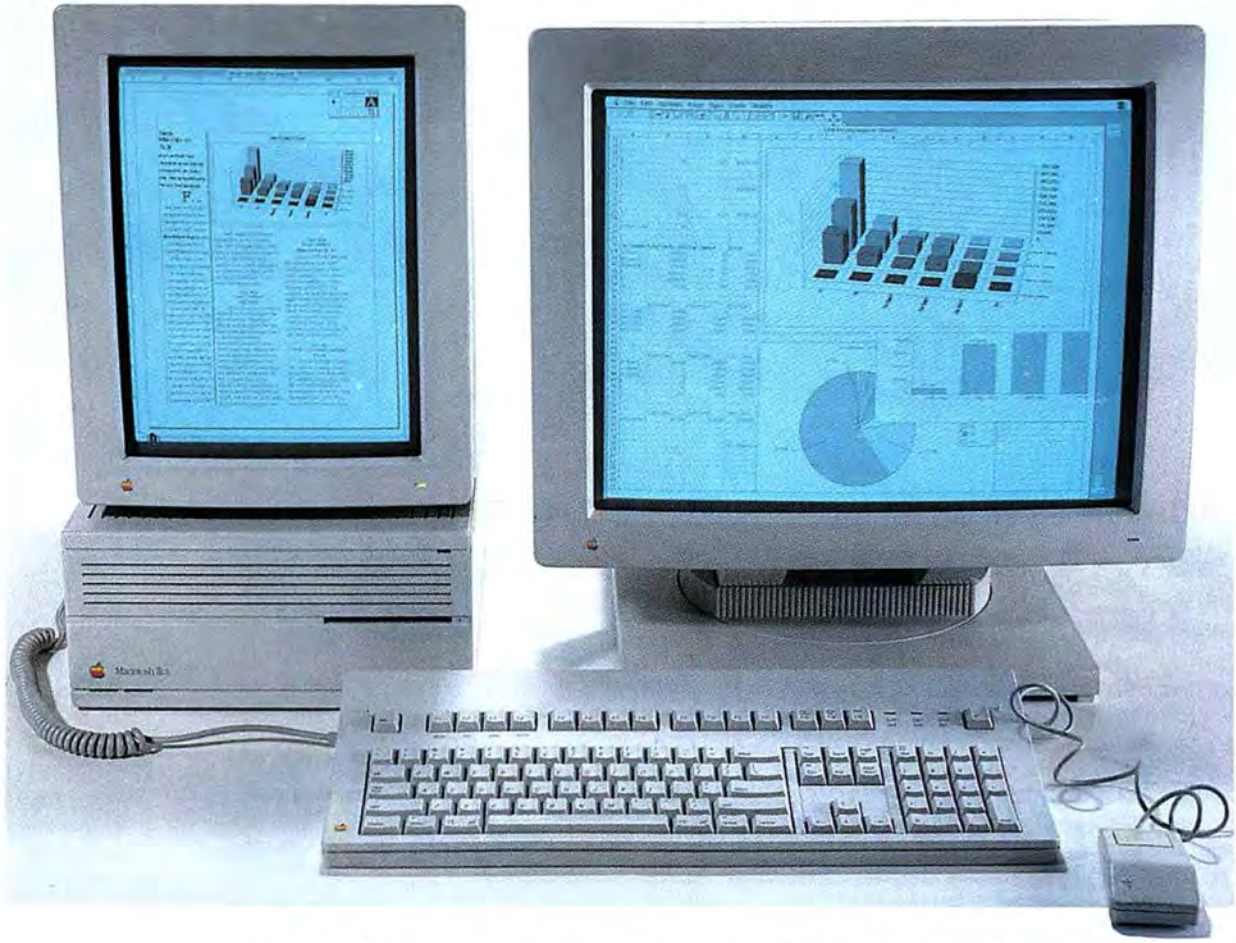
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EDITED BY RUSSELL ITO

Introducing the

Macintosh IIcx

Apple celebrates an early Christmas with a new CPU.



PETER GOULD / MACUSER

The Macintosh IIcx is Apple's latest "modular" Mac. It's a 15.7-megahertz 68030 unit with three full-size NuBus slots. Joining the CPU are Apple's first large-screen monitors: a single-page and a two-page display. Both are gray-scale.

Instead of keeping us in suspense all year, Apple has already unwrapped its initial 1989 goodies. Less than two months after introducing the SE/30, Apple announced in March yet another powerful Mac and two new monitors, while promising even more in store for us before the year is out.

The Macintosh IIcx is Apple's latest entry in its series of "modular" Macs, inaugurated with the Macintosh II and enhanced by the IIx. The newest Mac is essentially a Mac IIx with a small footprint or, if you prefer, an SE/30 with an external monitor and slots.

The machine's footprint has been reduced by providing only three NuBus slots, a correspondingly smaller power supply, and space to support a 3.5-inch internal hard disk (sorry, no 5.25-inchers) and a single floppy drive.

The new machine is roughly equivalent to a IIx or an SE/30 in function and performance. It's equipped with a 68030 processor running at 15.7 megahertz, a 68882 math coprocessor, one high-density floppy drive, a SCSI port, two serial ports, a stereo output jack, two Apple Desktop Bus ports, an Apple Sound Chip, and 256K ROMs. An empty socket for SIMM ROMs is provided to expedite future ROM upgrades. There's also an additional serial port for an external floppy drive.

The design of the newest Mac is quite elegant and introduces some new features. Even though the box is slim (only 11.9 inches wide), Apple has designed it to ventilate through the rear so it can be placed either horizontally or vertically. The internal design allows for easy servicing, and many components can be accessed without disassembly. When you do need to get into the guts, just remove one screw and everything else snaps apart easily. The power switch can be



The Macintosh IIcx's interior is remarkably simple — the whole thing is held together by a single screw.

locked so that the Mac will restart automatically after a power failure; this will be especially helpful if the Mac is used as a file server.

Depending on how Apple prices things, this machine will likely sound the death rattle for the Mac II, which loses by comparison in every respect except for having three more NuBus slots. The newest Mac is expected to be available immediately, with memory/hard disk configurations similar to those available for the SE/30.

While the IIcx confirms Apple's commitment to small CPUs, the company is also entering the big-screen market with two gray-scale monitors and NuBus video cards. The first, a "workstation" monitor, can display two full pages; the other, a "portrait" monitor, shows one page.

Both monitors have been designed to maximize clarity and sharpness. Apple wants a user to be able to look at text for hours without the eye fatigue often encountered with large screens. Both monitors use very flat antiglare screens, minimizing distortion at the edges, and employ a 75-hertz noninterlaced refresh rate, producing an image that is stable and free of flicker. For both monitors, Apple has video cards that will support four gray levels (using 2 bits per pixel) and, with an expansion kit, 16 gray levels (with 4 bits per pixel).

The workstation monitor displays 1,152-x-870 pixels (crossing the megapixel boundary with a total of 1,002,240 pixels) at 77 dots per inch (dpi). The screen measures 21 inches diagonally and comes with an integrated tilt/swivel base. The monitor should be available immediately and is expected to cost roughly from $2,600 to $3,000, including video card.

The portrait monitor displays 640-x-870 pixels at 80 dpi. Heretofore, all Apple monitors have used a 72-dpi display, and at 80 dpi, images will appear reduced in scale by 10 percent. This monitor comes with three Apple Desktop Bus ports, so you can connect your mouse and keyboard directly to it. The portrait monitor should ship in June and will cost about $1,500 to $1,800, including video card.

Apple also announced a 1-bit (black-and-white only) video card for its 12-inch monochrome monitor. At an expected price of from $200 to $225, this will provide a low-cost entry into the modular Mac line.

We're still waiting for Apple's fabled laptop, "tower" workstation, and promised major System update, but the first presents have been anything but stocking stuffers.

— James Finn

NEWS LINE!

EDITED BY GIL DAVIS

Apple's Earnings, Prices on Roller Coaster

CUPERTINO, CALIF. — Apple's projected earnings fell by as much as an estimated 42 percent for the quarter ending March 30, 1989, in part because Apple purchased large quantities of DRAMs last summer just before memory prices started dropping. To offset this expense, Apple hiked prices on many computers and peripherals last September, which it said prompted customers to buy lower-priced models and to opt for third-party memory and hard drives. In January, Apple announced lower profits and attempted to overcome buyer resistance by decreasing prices.

You Never Gave Me Your MIDI

LONDON — The holding company for The Beatles, Apple Corps Ltd., has filed a lawsuit against Apple Computer, Inc., demanding that Apple Computer discontinue its use of the Apple trademark and logo or that it remove sound-synthesizing capabilities from its computers, according to Wayne Cooper, an attorney for Apple Corps. He said the action followed a year of unsuccessful negotiations between the two companies over a 1981 contract in which Apple Computer reportedly agreed that it wouldn't use its trademark or logo on any product designed to reproduce or synthesize music, or to publish musical literature. An Apple Computer spokesperson said that the company didn't believe that it had violated the 1981 agreement.

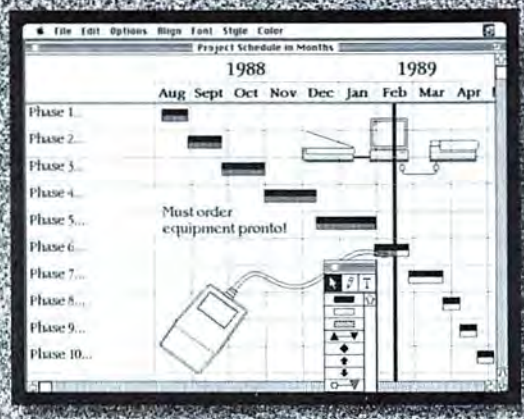
Lotus Buys into Mac Market

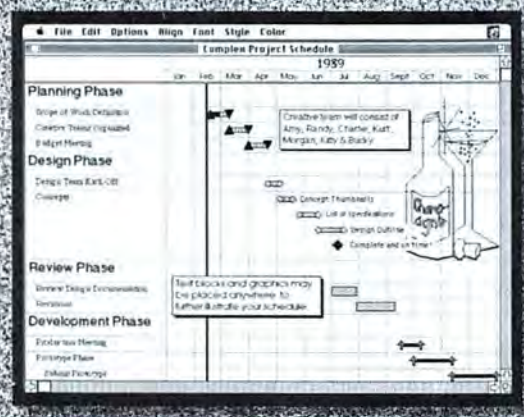
CAMBRIDGE, MASS. — Lotus reentered the Macintosh market in January by buying PS Publishing, which is developing two Mac products: PS Compose, a PostScript typesetting program, and PS Collage, a high-end drawing application. Lotus is moving PS Publishing to larger quarters and is hiring Mac programmers for the company's West Coast Mac development center.

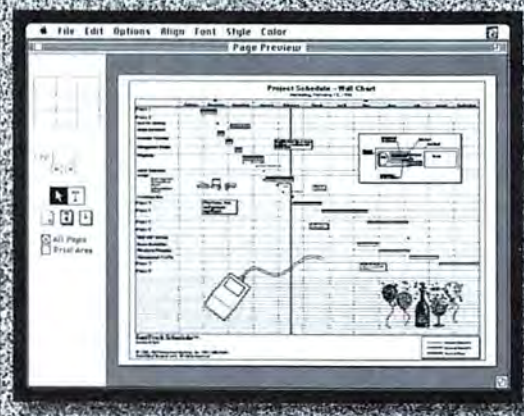
Claris to Drop MacPaint

MOUNTAIN VIEW, CALIF. — MacPaint, one of the original software products bundled with early Macs, is in its last version. MacPaint's features will be included in the next version of MacDraw, which may be announced later this year, according to Yogen Dalal, Claris' vice president of product development. Claris has also discontinued technical support for customers who originally bought its software as Apple-labeled products, unless they upgrade to the Claris versions.

Thin Bits . . . **Music Software Plus,** of Santa Cruz, Calif., has acquired the U.S. distribution rights to Music Publisher, a notation program developed by **Graphic Notes** . . . **Apple** is establishing a standards committee for HyperTalk and has invited the participation of **Silicon Beach Software,** developer of the HyperCard-compatible program SuperCard . . . **Connect Inc.** is offering registration and payment services for shareware programs through its on-line Mac Symposium . . .







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Speaking Out: Can IBM Steal Mac Developers?

One of the Macintosh's greatest attractions is its graphically based software designed by Mac developers. However, these programmers and their publishers are increasingly being sought by IBM executives to develop applications for Windows and Presentation Manager. To see how this new competition from IBM will affect the Mac's future, we asked industry leaders for their comments:

"IBM has been trying to attract our developers since almost the first Macworld Expo. However, there's a lot of difference in our platforms. In hardware, their '386 machines are only doing what our 68000 is doing in a Mac SE, and we've moved on to the more powerful 68020 and 68030. In software, our system has been fine-tuned over nearly eight years, so we have refinements that aren't in competing systems. For developers, picking anything other than a Mac is automatically going to handicap their best efforts."

— John Sculley, chairman of Apple Computer, Inc.

"I love the Mac. It's an extraordinary machine. But Apple's reluctance to offer a low-cost Macintosh is forcing us to consider developing on other platforms. We develop accounting software for small businesses, which are price-sensitive. That market has reached a plateau on the Mac, which is a financial danger signal for us and prompts us to look for new markets and new platforms. But even if Apple abandons the entry market, I think it will be several years before OS/2 has the kind of innovative software we now see on the Mac."

— Thomas Reahard, President, Teknon

"There's nothing new about IBM's trying to woo Macintosh developers away to Windows and Presentation Manager. Apple has tried to woo IBM developers to the Mac and has done it as well as anybody. Apple must do what all computer companies have to do to attract developers: offer an attractive, exciting platform that has lots of users so developers can make lots of money."

— Andy Hertzfeld, original Mac team member

"IBM is attracting developers to Windows and Presentation Manager using a new publishing division that's trying to talk with everyone and see what sort of deals can be put together. That especially impresses me because it means that combinations of developers can come out with far stronger products than previously available."

— Susan Morgan, President, SoftView, Inc.

"This isn't a religious question about whether it's sinful to do development for someone other than Apple. It's a business decision. The issue for us is whether we'd be better off taking a whole new direction or maximizing what we have on the Mac. Since we've got our hands full, we'll stay with the Mac."

— Charlie Jackson, President, Silicon Beach Software, Inc.

THE MACINTOSH ANALYST

Plucking the Fruits of Apple's Labors

One of the real ironies of the present day is that Apple Computer, which gave birth to the job title "Software Evangelist," is increasingly falling prey to the proselytizing missionaries of other faiths. What's more, these heathen cults appear to be making substantial progress in luring Macintosh software developers to worship at foreign altars.

The biggest missionary efforts directed against the faithful come from the church of the IBM/Microsoft OS/2 Presentation Manager and the related sect of Microsoft Windows. Both IBM and Microsoft have taken to emulating Apple's early evangelism and are singing hymns of praise for the promised land of enormous new markets on DOS and OS/2 systems.

Other churches praising a Mac-like graphical user interface have been formed by the likes of the Open Software Foundation, Hewlett-Packard, and Sun Microsystems. Of all these, Windows and Presentation Manager have the greatest potential to seduce Mac developers to go astray and to lead the largest number into apostasy. Even before the "other religion" of Presentation Manager came to be, Windows had already found at least a few Mac converts such as Adobe's Illustrator, Blyth's Omnis, T/Maker's ClickArt, and SoftView's TaxView Planner.



Microsoft was among the first to bring about mixed marriages between Windows and the Macintosh. Being both the developer of Windows and a major applications developer, with some of the best-selling programs for the Mac, Microsoft has implemented several successful Macintosh programs on Windows.

At least one other major vendor wasn't far behind: Aldus, of PageMaker fame. The lure of the large and rapidly growing market for Windows software and the promise of future dominance by the OS/2 Presentation Manager (to say nothing of the large installed base of IBM and compatible systems) was simply too tempting to resist.

Now, however, as Windows' momentum grows and OS/2 really starts building up steam, quiet encouragement for Mac developers to join the fold is giving way to active lobbying. Both IBM and Microsoft have launched efforts to push Macintosh software developers to turn their hearts toward Windows and the Presentation Manager.

The critical implicit question is whether the result will be what amounts to an abandonment of the old religion of Cupertino. It would be naive to deny cause for concern on this score. For example, some programs originally developed on the Mac but now available on Windows recently seem to be getting new features sooner on the Windows version than on the Mac.

One thing that is certain, one way or another, is that the advantages Apple has had in being the only game in town as far as offering an affordable system with a graphical user interface will be significantly fewer in the future. Even though the Mac interface retains some advantages over the IBM interface, the margin is certainly closing.

At a minimum, that means that Apple will need to be more competitive in pricing the Macintosh. Apple's abortive effort to hike Mac prices at year's end is a clear sign that premium prices for the Mac in comparison to similarly configured IBM and compatible systems are no longer sustainable.

Nevertheless, as long as Apple responds well to the increased competitive pressure with more aggressive pricing, there's no reason to think that the evangelical efforts of Apple's competitors will inflict permanent damage to the faith. There continue to be software developers who simply prefer the Mac and aren't interested in moving to other environments.

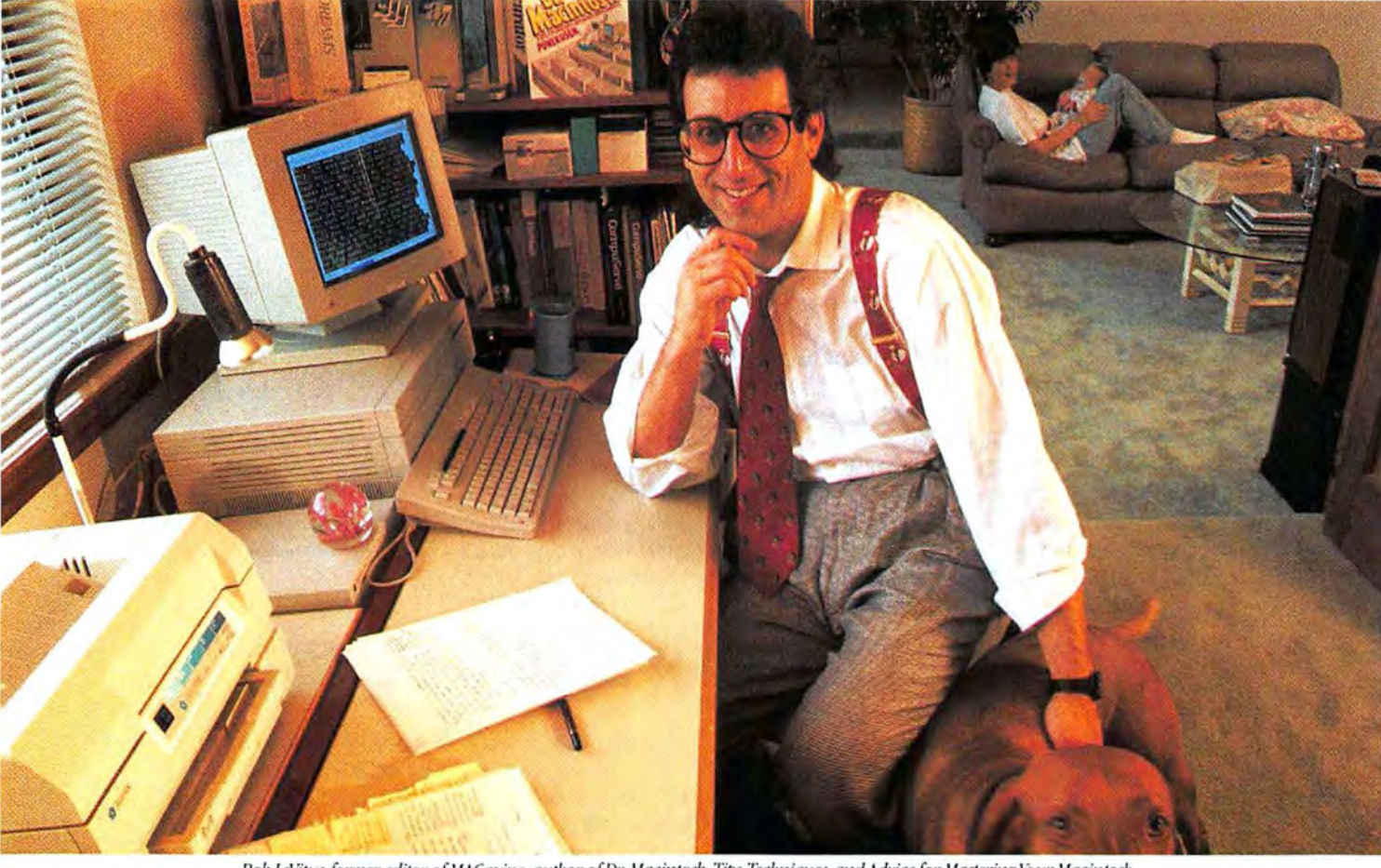
More important, however, is the old truism that every stick has two ends. Software portability between the Mac and other systems is, after all, a two-way street. Witness the growing number of IBM and compatible software vendors hard at work developing versions for the Macintosh. DOS-to-Mac conversions are nearly as numerous as the reverse.

If Apple steers clear of additional pricing gaffes that simply make the Macintosh hardware too expensive to be competitive in the marketplace, chances are good that neither sect will make truly dramatic gains at the expense of the other. There's even a chance that the result will be a general movement away from narrow sectarianism toward an era of more tolerance in which developers and users will have even greater freedom to choose which "religion" they prefer without losing out on a major segment of software choices in the process. That would clearly be a better world for all of us.



By William Zachmann

ILLUSTRATION: MARK W. SWEENEY / MACUSER



Bob LeVitus, former editor of MACazine; author of Dr. Macintosh: Tips, Techniques, and Advice for Mastering Your Macintosh.

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Mac's Fifth Anniversary Feted in San Francisco

Last year John Sculley called 1989 the year of the CPU, and Apple kept that promise by rolling out the SE/30 at the January Macworld Expo in San Francisco. The SE/30 helped mark the Mac's fifth anniversary, and it is the second in Apple's new line of machines based on Motorola's 68030 chip. Along with the Mac IIx, the SE/30 pushes the state of the Mac beyond the technological level of 68020 machines like the Mac II (see "Much Ado About Something," March '89, for more on the SE/30).

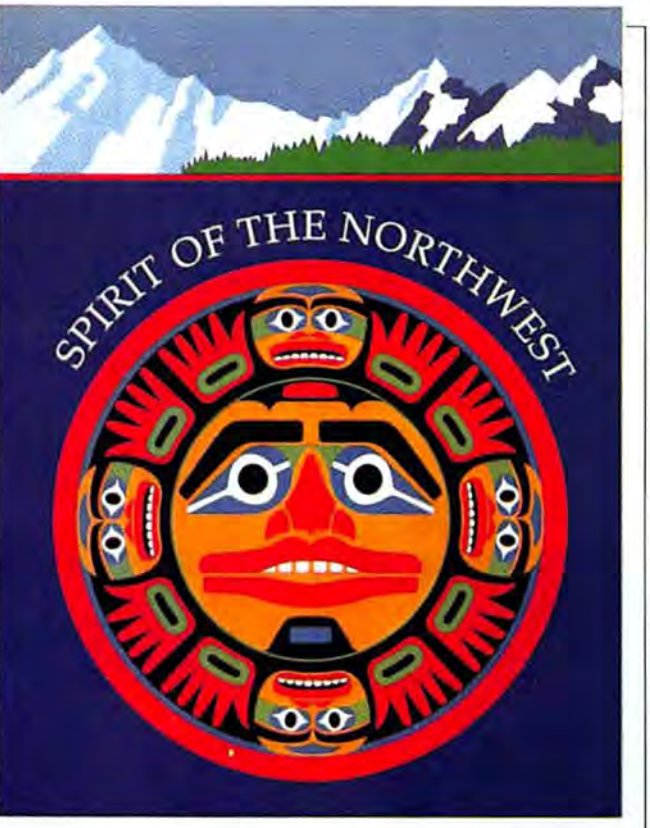
Apple also formally announced its acquisition of Coral Software, a developer of programming languages and artificial intelligence tools. In addition to Macintosh Programmers Workshop 3.0 (MPW 3.0), Apple will now distribute Mac Allegro Common LISP to developers. To further bolster its developer services, Apple announced that it will bring the Apple Programmers and Developers Association (APDA) back under direct management of its Cupertino, Calif., offices.

The other big news coming from Apple was its new version of A/UX. Version 1.1 is more compatible with other UNIX operating systems, and it makes developing applications for A/UX easier. In other related announcements, several software publishers, including Versacad, Claris, and Microsoft, introduced A/UX-compatible products — Versacad 2.1, MacDraw II, MacProject II, MacWrite II, Word 4.0, and PowerPoint 2.0 will support A/UX.

Through these announcements, Apple set an agenda for the industry — build on the existing technology, taking it to the high end. Echoing this sentiment, other manufacturers unveiled their contributions to the high-end Mac.

At the forefront were erasable optical drives from four companies. Sony and Ricoh were the primary OEMs, and all four companies used one of these two engines. Pinnacle Micro uses Sony's drive in its REO-650 (see New on the Menu, April '89, for more information), while MACsetra Technologies, SUMO Systems, and Jasmine Technologies chose the Ricoh. The Ricoh engine was said to have a faster average access time than the Sony, but the precise speed difference varied with the proprietary driver used. All of the drives are SCSI.

Another big development on the floor was third-party, PostScript-compatible output devices. Tektronix had two — ColorQuick Ink-Jet, a QuickDraw-based 216-dot-per-inch (dpi) printer that lists at $2,495, and Phaser CPS (for the Mac), a 300-dpi color thermal transfer printer listing at $15,995. Howtek had its Pixelmaster Thermo-Jet 240-dpi ink-jet printer for $7,690. NEC debuted its challenge to Apple's LaserWriter IINTX: the Silentwriter LC 890XL, a 300-dpi, eight-page-per-minute printer ($6,995). Ricoh also had a new entry, the PC Laser 6000/PS 300-dpi printer for $4,495.



Tektronix entered the world of PostScript-compatible printers with its two entries — ColorQuick Ink-Jet, a QuickDraw-based, 216-dpi printer that lists at $2,495, and Phaser CPS (for the Mac), a 300-dpi color thermal transfer printer listing for $15,995 (output shown above).

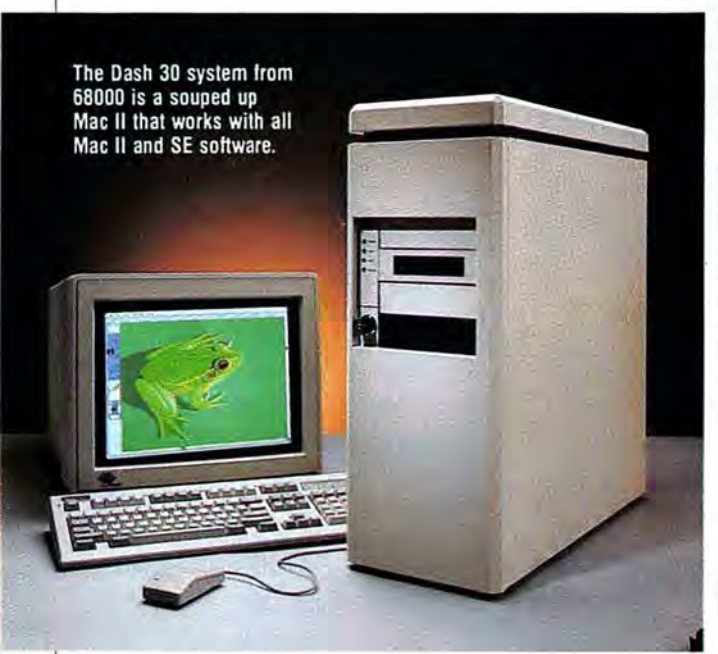
Adding a new twist to PostScript output, Agfa, in an agreement with Adobe, implemented a PostScript interpreter in its MATRIX digital color film recorders. Agfa expects this new system to ship in the third quarter of the year.

And even with all this high-tech, high-price color activity, there was still room for a low-price, low-tech color alternative. Studiotronics showed ColorSet, a software package that turns any flatbed, gray-scale scanner into a color scanner. Don't worry — this isn't Ted Turner software — ColorSet is intended for use with color originals only. The software lets you make color scans in three passes (red, green, and blue) and then composite those separate files into a reconstructed color image. Discovery Software, which entered into a marketing agreement with Studiotronics the day after the show, lists ColorSet at $199.95.

Agfa wasn't the only German entry at the show, as miro showed its miroGRAPH graphics boards for the Mac II — the Prisma 20 P for 256 colors ($1,895), Prisma GS for 256 gray scales ($1,895), and the Pencil 20 P for work in black and white ($995). AST Research showed its NuView color image capture and processing board that supports 8-, 16-, and 24-bit color on the Mac II. Though AST claimed it would be shipping sometime in the first quarter, it looked as if it still needed a lot of work. NuView has programmable resolution up to 645-x-484 pixels and lists for $2,599, plus $695 for the AST-Converter.

Higher End

Human Devices (see "A Chorus LAN" elsewhere in New on the Menu) and 68000, Inc., demonstrated their high-end computing solutions for the Mac, making the Mac a strong player in the desktop-engineering market, among



The Dash 30 system from 68000 is a souped up Mac II that works with all Mac II and SE software.

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other number-intensive fields. A souped-up Mac II, the Dash 30 system from 68000, Inc., works with all Mac II and SE software and incorporates a 68030, 68882 math coprocessor, a high-speed RAM cache, a disk-DMA channel, accelerated SCSI circuitry, 4 megabytes of RAM, a virtual-memory scheme, a fast 180-megabyte hard disk, an 800K floppy drive, and five open NuBus slots. Dash 30 also maintains the Mac interface, can be networked, and lists for $15,000 for a standard unit.

Orchid continued the trend upward, giving the Mac more RAM-caching capabilities with its MacSprint II ($299). MacSprint II increases the performance of a Mac II by 20 to 40 percent. Pinnacle Micro also had its entries — the NuBank Cache Cards, with 4 megabytes ($1,995), 8 megabytes ($3,345), 12 megabytes ($4,695), and 16 megabytes of RAM ($5,995).

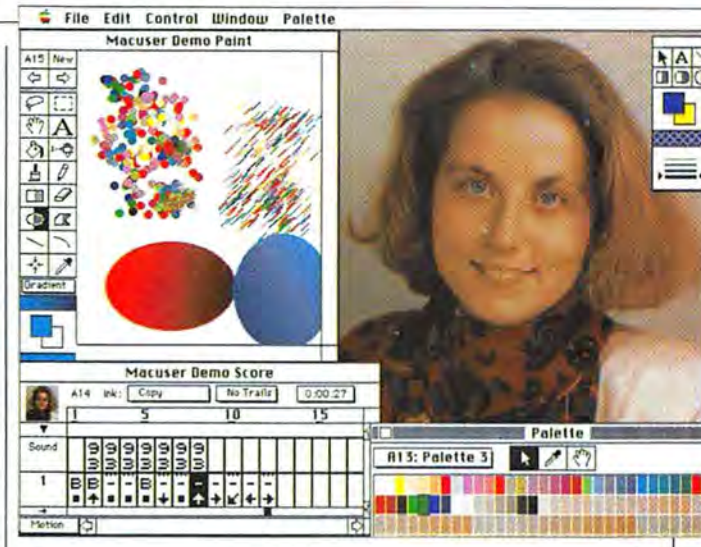
Part of going toward the high end includes gaining speed, and Optical Character Recognition (OCR) has managed to do just that. Calera Recognition Systems' package can scan a letter-sized document in under ten seconds, thanks to its scanner, the Compound Document Processor (CDP) 9000. The CDP 9000 has four Motorola 68000 processors; it can handle batch processing; it can be networked (TOPS, Ethernet, and AppleTalk); and it works on a 1-megabyte system. The only thing it isn't is cheap — $29,950 is the list price. The software, a Mac version of the PC's Top Scan, is expected to sell for around $695.

Xerox Imaging Systems added a bit of intelligence to OCR with its Intelligent Character Recognition (ICR) package — a port of the Kurzweil technology. For $995, you can scan and read skewed text, photocopies, and faxs.

Software Marches On

Software developers took the high road too. Leading the way was Silicon Beach with SuperCard, a HyperCard-like application development environment (for more information, see "A Wilder Card," March '89).

Other movements in the realm of HyperCard included the announcement of some true HyperTalk programmer's tools. Heizer Software was selling CompileIt!, a HyperTalk script compiler ($99), which includes HyperCard. Although the version selling at the show proved to have memory-management problems, the current shipping version has patches for the error. Although it wasn't ready yet, another item generating a lot of interest was TMON's HyperTMON, a HyperText debugger listing at $99.95 and expected to ship at the beginning of the second quarter. And there was no shortage of new HyperCard books. Among the most interesting of these was *The HyperTalk Bible* from The Waite Group, published



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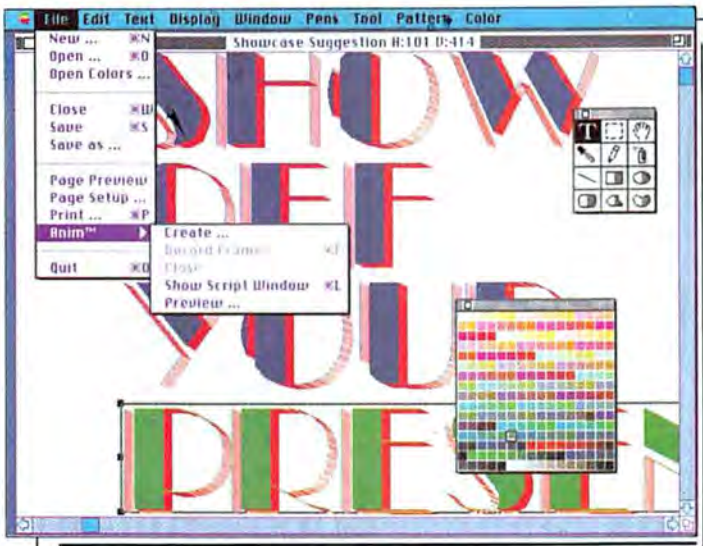
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Showcase F/X offers text scrolling, fades, wipes, dissolves, and on-screen motion. It also acts as a presentation program (animated presentations) and will read graphs and charts from Cricket Presents or PowerPoint.

by Howard W. Sams.

Claris announced a major upgrade for its word processor, MacWrite II, bringing it up to the ranks of the higher-end word processors like WriteNow 2.0 and MindWrite. Now MacWrite II can handle multiple windows — up to seven documents open at once. It also supports Microsoft's Rich Text Format (RTF), importing and exporting documents from Word, Works, Write, old MacWrite, and WriteNow. Users can create up to 30 style sheets, which can include footnotes, endnotes, precise leading, multiple columns, and font sizes from 2 to 500 points. It also supports the eight QuickDraw colors, letting a user insert MacPaint or PICT files directly into documents. This new version is available for $249.

Animation programs were out in full force with entries from Electronic Arts, Aegis, and MacroMind. As a follow-up to Studio/8, Electronic Arts introduced Studio/1, a black-and-white version of Studio/8 that is the first to integrate paint and animation.

Aegis, a major player in the Amiga world, introduced its first Mac product, Showcase F/X ($595), an animated titling program. Showcase F/X offers text scrolling, fades, wipes, dissolves, and on-screen motion as well as an ANIM file for storing compressed animations, and the ability to read graphs and charts from Cricket Presents or PowerPoint. In the second quarter of this year, Aegis plans to offer Showcase F/X along with backgrounding images, animation segments, and the product manuals all on CD-ROM (four megabytes of material).

MacroMind brought its animation technology to the presentation front with Director ($695). Director, formerly VideoWorks Professional, simplifies the creation of a multimedia presentation. The Overview window lets you choose snippets of animations to put together in a presentation. In the AutoAnimate window, you create the multiple frames for the animation. On the very high end of animation packages was RenderMan from Pixar, in the Levco booth. This pro-only package is an industry standard for producing realistic 3-D animation. For the Expo, Pixar ported its animations created in RenderMan over to Levco's transputer board.

Among the nonstories at the Expo was Wingz. Once again, Informix was not shipping this much-ballyhooed spreadsheet package. Instead, Informix added hats to its apparel line, which already included jumpsuits, flight jackets, and, of course, tote bags. Apple also contributed to this trend by not announcing a color printer. Apple also didn't hint at any plans for a full-page or double-page display monitor as had been anticipated by industry insiders. Guess we'll just have to wait a few months for the Boston show.

— Kristi Coale

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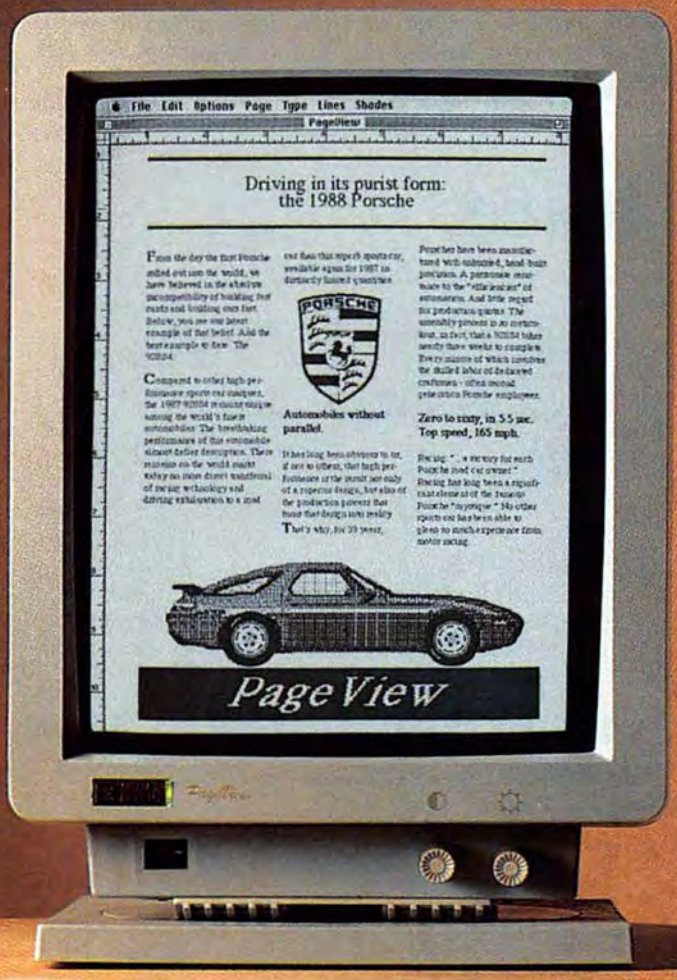
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A Chorus LAN

Say *supercomputer* to just about anyone, and they'll immediately picture a machine the size of a pickup truck. But Human Devices may change that with Chorus, a supercomputer for AppleTalk networks. Chorus is a freestanding tower that combines parallel processors and reduced instruction set computer (RISC) technology in a "compute server" for AppleTalk networks; it can process data at speeds of from 8 to 32 megaflops (depending on the configuration). In a typical work situation, you send your job to the Chorus unit for processing, and it completes the task and returns the results to you. Unfortunately, Chorus doesn't increase AppleTalk's speed, but it does put supercomputer-level computing on your network.

Supercomputers, however, aren't for everyone. Chorus is intended for high-end situations that require tremendous levels of computational power, such as economic and financial modeling, photographic-quality imaging, and engineering tasks. The idea is to bring supercomputer power in-house, right on your AppleTalk network with your familiar Mac interface.

Chorus can be outfitted with from 1 to 16 floating-point processors, each of which contains a RISC integer processor rated at 5 million instructions per second (mips); a floating-point unit that can crank out IEEE-standard double-precision calculations at 2 megaflops; a megabyte of high-speed RAM; and Human Devices' proprietary Virtual Tree bus interface.

Accessing all this computing power, however, takes software, so Human Devices provides developers with Macintosh Programmers' Workshop (MPW)-based, C, Pascal, and FORTRAN compilers. The manufacturer boasts that with Chorus, programmers writing new applications or converting existing ones can do so without altering their interface code. Chorus' system software is also designed to handle the parallel processing and networking tasks that are normally left to the developer.



One singular sensation — Chorus from Human Devices is a supercomputer for your AppleTalk network.

To help get things started, Human Devices has already arranged for a number of commercial packages to be ported to Chorus. Among the programs being converted are Crystal Ball from Market Engineering, Dimensions from Visual Information, and LogicWorks and MacSpice from Capilano Computing.

Chorus comes in two basic configurations. Chorus 4 includes four floating-point processors, a dedicated I/O processor with AppleTalk and FlashTalk ports, and Human Devices' system software. It lists for $25,500. Chorus 4 can be expanded up to three processor cards, each of which carries four additional floating-point processors. The cards list for $16,800 each. For those with slightly smaller checkbooks, there's the entry-level Chorus 1, which houses a single floating-point processor and lists for $9,700. The Chorus 1 can also be upgraded to any of the larger configurations.

If that isn't enough for you, Human Devices offers a number of additional options, including an Ethernet I/O upgrade and a software simulator that lets developers create software for Chorus units under MPW on nonnetworked Macs. The software simulator lists for $450. To audition Chorus, contact Human Devices at 100 Varick St., New York, NY 10013; (212) 580-0257.

— *Russell Ito*

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Built to scale

If you design on a Mac II, a screen that's too small will cramp your style. That's why you should be looking into a SilverView from Sigma Designs.

At 21", this landscape monitor offers the biggest viewing area anywhere. A full 16" x 12" 2-page spread including rulers and margins.

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Something else should weigh in our favor.

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Besides black and white, there are SilverView models offering 16 or all 256 different shades of gray. So what you used to leave up to the imagination can now be in all your work. Like subtle halftones or delicate shadings.

SilverView's also remarkably comfortable to work with. Its high contrast flat-screen virtually eliminates glare and distortion. And its unusually high refresh rate delivers rock solid images that never flicker.

To find out just how much better your work can look, call Sigma Designs at (415) 770-0100 today.

Then never scale down your ideas.



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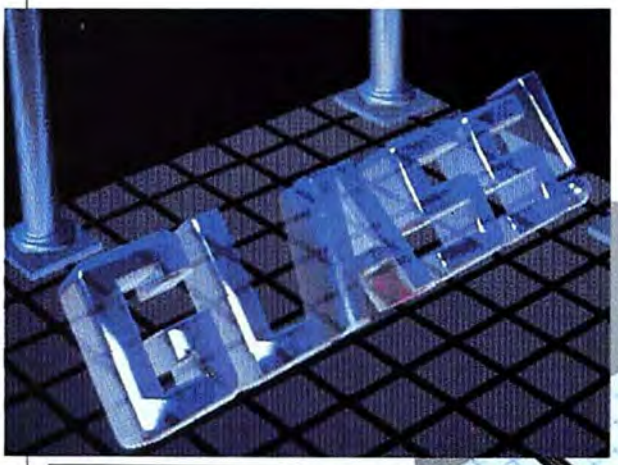
Finishing Touches

There was more to 3-D in January than Coke commercials and the Super Bowl. Enabling Technologies announced Pro3D Mixed Media, a $495 multipurpose 3-D modeling, illustration, and presentation package. Pro3D Mixed Media lets you type text in 3-D, import backgrounds and 3-D objects from a variety of sources (including its massive 3-D clip-art library), and chart your heart out with its built-in 3-D any-shape grapher.

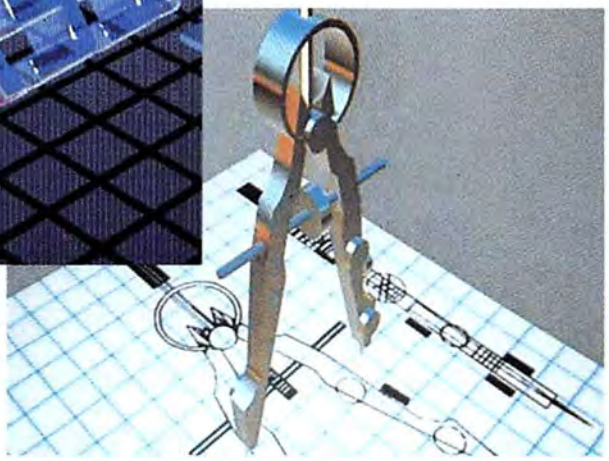
If you're still not satisfied, there's one last touch — Pro3D Photo Finish. It embodies all of Pro3D Mixed Media, plus you can select each 3-D object and tell the program what material it's made of, how shiny its surface is, and, if applicable, how transparent the object is. You can set up multiple colored light sources and designate selected surfaces to reflect one or more surrounding images, giving an effect very close to ray tracing but requiring much less imaging time. When you give the final OK, Pro3D Photo Finish can produce amazingly real-looking stuff — without the typical computerish faceting, jagginess, and dullness. Real shine, real shadows, real neat. The result is nothing less than grand. The price will be a little less than two grand when it ships sometime midyear.

Both packages will be file compatible with their PC-based counterparts. For more information, contact Enabling Technologies, 600 S. Dearborn St., Chicago, IL 60605; (212) 545-7188.

— Salvatore Parascandolo



Pro3D PhotoFinish's variable transparency feature, combined with the option to select reflective and reflected objects, produced this realistic glass object floating amidst brushed metal columns.



Pro3D Photo Finish smooths surfaces and, for selected objects, simulates reflections from surrounding images, giving an effect very close to ray tracing but much quicker.



With the new PaintJet color printer from Hewlett-Packard.

Look at the possibilities. Instead of basic black and a few dull shades of gray, look at the zip that color adds to graphs and charts. Overheads will command attention. And reports will have sparkling visual surprises tucked inside.

The PaintJet printer brings so



RUMOR MANAGER

The next generation of CD-ROM players, which are starting to appear now, will not only be able to read data CD-ROMs but will also be able to extract the data from audio CDs. That means that you can use those wonderful effects from the Star Trek Sound Effects CD in your Apple Sound Chip–equipped Mac without running them first through a digitizing/processing box (or board).

That's not all you can expect from the next CD-ROM drives. The Tandy-developed erasable (and thus reusable) CD technology is coming along much faster than was originally predicted. Drives using this technology should be available by the end of the year.

Of course these drives won't be compatible with existing drives and CD-ROMs, nor will they work with the new enhanced audio CD-ROMs.

Apple has decided to get into the slide-making business. It plans to buy the marketing rights to an existing unit, and, in the words of a person we've promised anonymity to, "We'll do the software right." Of course these are the same people who did the AppleFax Modem's software.

Just as the copy-protection issue has about disappeared (have you noticed that most games now come without copy protection?), a major productivity software publisher plans to "protect" its highly touted new product (due out late this year) with a hardware key. Hard to believe but true. Too bad, too, because the program really looks promising.

Way back when (three years ago or so), dedicated server hardware was all the rage. It didn't work too well and wasn't remarkably reliable. It was a good idea that demanded more than the 1985 technology could do. Now Apple and another company are going to try the dedicated server again.

The third-party version will come preloaded with many specially licensed and preconfigured software packages. It is expected to have a high-end and a low-end word processor, a spreadsheet, a flat-file database, charting software, distributed communications software, and electronic mail, all built-in.

All you need to do is plug this box in (it also has 680 megabytes of disk storage) and hook up your FastTalk cables. This could be the hardware sleeper bargain of 1989.

Add-in colorizing modules are being developed for several very popular older packages. While some publishers have revised their products to take advantage of the color capabilities of the Mac II and the SE/30, other publishers have let some classic software languish. These add-in packages, which are being developed by some third-party developers, will rectify the situation. Expect to see them by summer.

The next great Mac application will come out of a garage. (We'd like to thank Dave Winer — who, at last glance, didn't work out of a garage — for that one.)

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We'd like to hear from you. Just call **1-800-752-0900, Ext. 688C,** for your nearest authorized HP dealer. We'll be happy to send you a sample color page. Complete with cows.

Our cows were created using Pixel Paint
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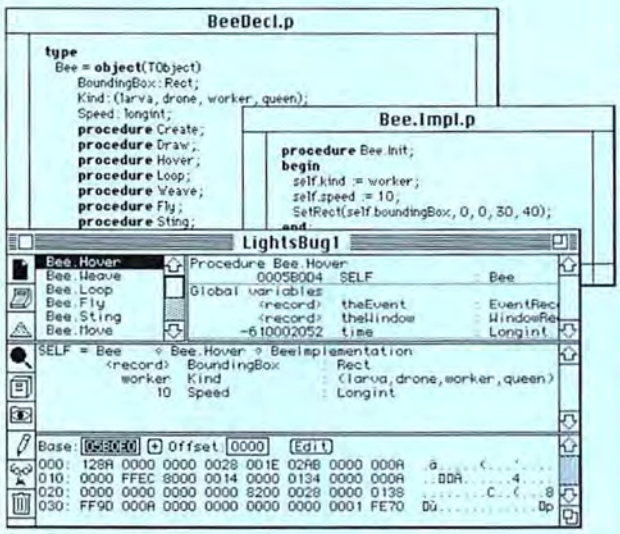
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Only THINK Pascal's debugger steps you through source code, displaying variables and their values in plain English.

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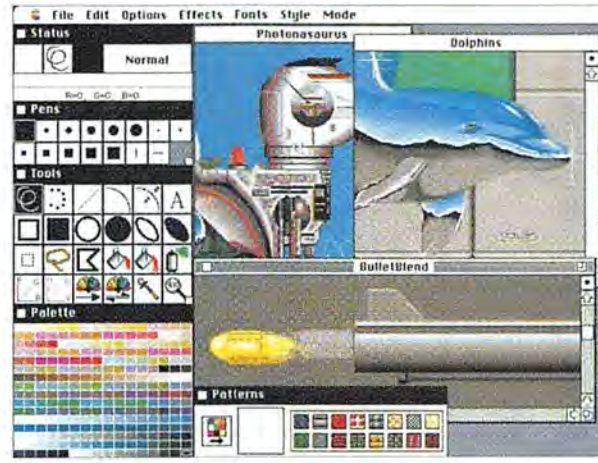
GRAPHICS

Photon Paint

Color paint applications will soon be one of the most crowded categories of Mac software. Photon Paint is one of the latest entries. Though it isn't the equal of Studio/8 or PixelPaint, Photon Paint does offer a workable painting environment, multiwindow capability, some interesting special effects, and, perhaps most importantly, a more affordable price.

Photon Paint was originally written for the Amiga, and MicroIllusions has done a creditable job of transforming it into a Mac program that's generally faithful to the Mac interface.

The Photon Paint environment is dominated by five palettes (tool, pen, color, pattern, and status) in floating, movable windows. Only the color palette is sized appropriately for its function; the others are excessively large. On a 13-inch monitor, they can cramp the drawing area. The pen and tool palettes are resizable; the pattern and status palettes should be.



Photon Paint can open multiple documents. The current palette will be the last loaded. Activating previously opened documents will not restore their true colors if palette shifts have occurred.

In comparison to other Mac applications, Photon Paint is limited. For instance, only 14 standard pens are available, and the spray can is adjustable only to those pen sizes. Also, although pattern palettes can be saved, they can hold only 16 patterns. And though discontiguous selections are possible (Command-click), the lasso and rectangle cannot "cinch down" on a selection.

On the other hand, any Clipboard image may be used as a brush, and the RGB and HSV (hue, shade, value) tools provide an easy and powerful way of revising the color palette. Just click on two colors and Photon Paint calibrates the values between them, creating intermediate shades for all the intervening steps. (Custom palettes can be saved.) Palette changes are instantly reflected in the current document. However, although the palette can be restored with the Undo command, the change in the image is irreversible. Exercise care with unsaved documents.

Photon Paint supports five graphic modes: normal, add, subtract, blend, and wash, a watercolor-like effect. It also incorporates a number of dynamic effects: bend, twist, tilt, and rotate. Controlled from dialog boxes, dynamic effects can be calibrated precisely (e.g., 43 degrees of rotation), but since you're not getting any visual feedback, precision doesn't necessarily translate into accuracy. The dynamic effects, however, do work with lassoed objects — without affecting any unwanted areas outside the selected item. Selections so modified can be dropped in the image (to test the fit) and still be undone.

The most eye-catching dynamic effect is the ability to "wrap" a selection to create three-dimensional–looking shapes, such as cones, spheres, and cubes. Lighting (direction, distance, and color of a spotlight) can be altered to enhance the 3-D effect. The results are pretty good with patterns, but with colors, color banding can diminish the effectiveness of the wraps. Although most shapes are created fairly quickly, some can take a bit of time to be produced.

Perhaps most useful in day-to-day operation is Photon Paint's multiple-window capability. Any number of documents (limited only by available memory) may be open simultaneously.

The Five-Mouse Rating

🖱🖱🖱🖱🖱	EXCELLENT
🖱🖱🖱🖱	VERY GOOD
🖱🖱🖱	GOOD
🖱🖱	FAIR
🖱	POOR
💣	DOESN'T WORK

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Quick Clicks

A handy Send to Rear button on each window lets you shuffle the stack. Palettes are loaded with each document, but a link is not maintained when another image with a different palette is opened. So the last palette loaded will always be active. Bringing an image to the front will shift its colors to the currently active palette. If you forget about this potentially disastrous feature and have saved your file in a previous version, there is a Revert to last saved option. But if you don't save often and you open an old document while working on an unsaved image, watch out. Your unsaved file will take on the color palette associated with the incoming document, and you can't undo this effect.

If you don't save often and you open an old document while working on an unsaved image, watch out.

Also, you may open several windows into the same document with Photon Paint's magnification tool. Click and it creates a four-times enlargement in a separate window. Click again and zoom to eight-times enlargement (FatBits size) in yet another window. Zooms of 16- and 32-times normal can also be attained. Intermediate magnifications are possible with the plus/minus buttons at the lower left of each window. Changes made in one view are updated in the others. However, the windows aren't linked. If you scroll around in one image and switch to another, you'll have to center again. Also, Photon Paint does not remind you if a magnified view is already deployed; it simply creates another window, leading at times to a stack of multiple — or even identical — zoom-windows under your drawing. Still, the ability to display multiple, magnified views is valuable.

Photon Paint reads and writes only its own format. Luckily, that format is PICT2, although the program's Paint icon with PP superimposed gives no clue of this. Transportable files are a plus.

The Photon Paint disk also includes a black-and-white version. Only a shadow of the color program, it will not displace any of the black-and-white paint applications already in existence. And colors cannot be assigned to a document on standard Macs to be viewed in color on Mac IIs. The monochrome version's saving grace is its ability to view Photon Paint files (it only reads PICT) on standard Macs. Finally, Photon Paint's manual is nicely designed but woefully short on information about the program. The generally clear and concise version 1.1 update booklet is better.

Photon Paint 1.1 isn't the final word on color painting. However, it operates reasonably well and, at $299, is priced at substantially less than its competitors. If you're on a budget or don't need all the features found in the higher priced programs, Photon Paint could be your paint program.

— Carlos Domingo Martinez

Photon Paint



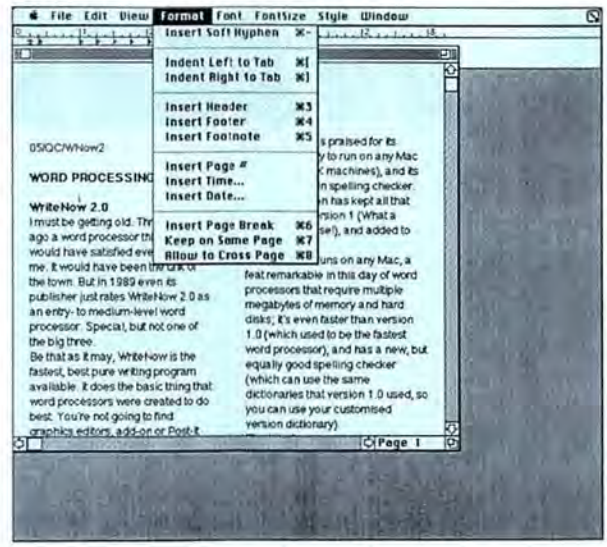
List Price: $299.95
Published by: MicroIllusions, 17408 Chatsworth St., Granada Hills, CA 91344; (818) 360-3715, (800) 522-2041.
Version: 1.1
Requires: Mac II and color board, 1 megabyte RAM, and second disk drive. 2 megabytes and hard disk recommended (black-and-white runs on 512K).
Compatibility: MultiFinder friendly.
Application Size: 188K, color; 103K, black and white.
Copy Protection: None

WORD PROCESSING

WriteNow 2.0

I must be getting old. Three years ago a word processor this powerful would have satisfied everyone, even me. It would have been the talk of the town. But in 1989, even its publisher rates WriteNow 2.0 as just an entry- to medium-level word processor. Special, but not one of the big three.

Even so, WriteNow is the fastest, best pure writing program available. It does the basic thing that word processors were created to do best. You're not going to find graphics editors, add-on or Post-it notes, page-layout ability, indexing, or outlining in WriteNow.



This is the manuscript for this Quick Click. The space above the two columns of text is the default (four-line) header area. It can easily be made smaller or eliminated. Notice the ruler(s). Each column can have its margins set independently (although the overall column space is fixed).

Of course, being too pure a writing tool isn't a virtue either. Today's technology offers a lot to writers, and WriteNow has a good and useful selection of writing features. There's an excellent spelling checker, mail merge (including label creation), graphics inclusion, footnotes, and excellent header and footer control.

WriteNow isn't a new program. The original version was a well-received, justly popular program, but it lacked a lot of features. For example, importing and exporting (even to text-only files) required a separate translator program. Version 1.0 of WriteNow was praised for its speed, its ability to run on any Mac (including 128K machines), and its excellent built-in spelling checker. The new version has kept all that was good in version 1.0 (what a pleasant surprise!) and has added to the program.

WriteNow still runs on any Mac, a feat remarkable in this day of word processors that require multiple megabytes of memory and hard disks. Version 2.0 is even faster than the previous version, which used to be the fastest word processor. It also has a new and equally good spelling checker that can use the same dictionaries that version 1.0 used, so you can still use your customized dictionary.

The list of new and improved features is too long to print in its entirety here. One of the highlights is direct import and export to text only, text with line breaks, MacWrite, and RTF formats. RTF is Microsoft's Rich Text Format and is currently the only way to import from and export to Word. However, WriteNow now uses external filters for import and export. That means that T/Maker can produce and cheaply distribute new filters. They're working on one specifically for Word, and if it isn't available now, it will be out shortly.

Other notable new features include full cursor-key support; the ability to hide graphics in documents, which speeds up the already excellent performance; a built-in utility that counts characters, words, and paragraphs; both static and dynamic time and date stamps; and a Window menu — useful since you can have many documents open at once. "Smart quotes" are available for those who prefer them.

WriteNow has a wonderful interface, as intuitive as the original MacWrite interface. You really don't need to refer to the excellent manual to get started. The basic writing tools and functions are right where they should be, and there are very few surprises in using them. This is the way a Mac application is supposed to work.

There are a few things that I wish T/Maker had done differently. I don't like the way line spacing is controlled. Instead of clicking on icons in a ruler or using menu commands to select single, space-and-a-half, or double spacing, you use an icon to adjust the spacing one point at a click (or hold the mouse button down continuously and watch the increments zip by). To double-space 12-point type requires 12 clicks; to get it back to single spacing (after it's too late to Undo) requires 12 more clicks. Not only is that too much unnecessary labor, it doesn't always produce optimal spacing. Some very small-bodied fonts look double-spaced with less than exactly double their size as line spacing, while the reverse is true for some large-bodied fonts. Word actually makes such distinctions. While the system used is totally flexible, presets that take into account type size and style would have been nice — at least for single, space-and-a-half, and double spacing.

One nice touch is that line spacing can be fixed or flexible. Fixed spacing freezes the actual distance between lines, regardless of what size of type is in the line or whether there are graphics in the line. Flexible spacing allows the actual spacing to adjust to fit large characters, super- and subscripts, and graphics.

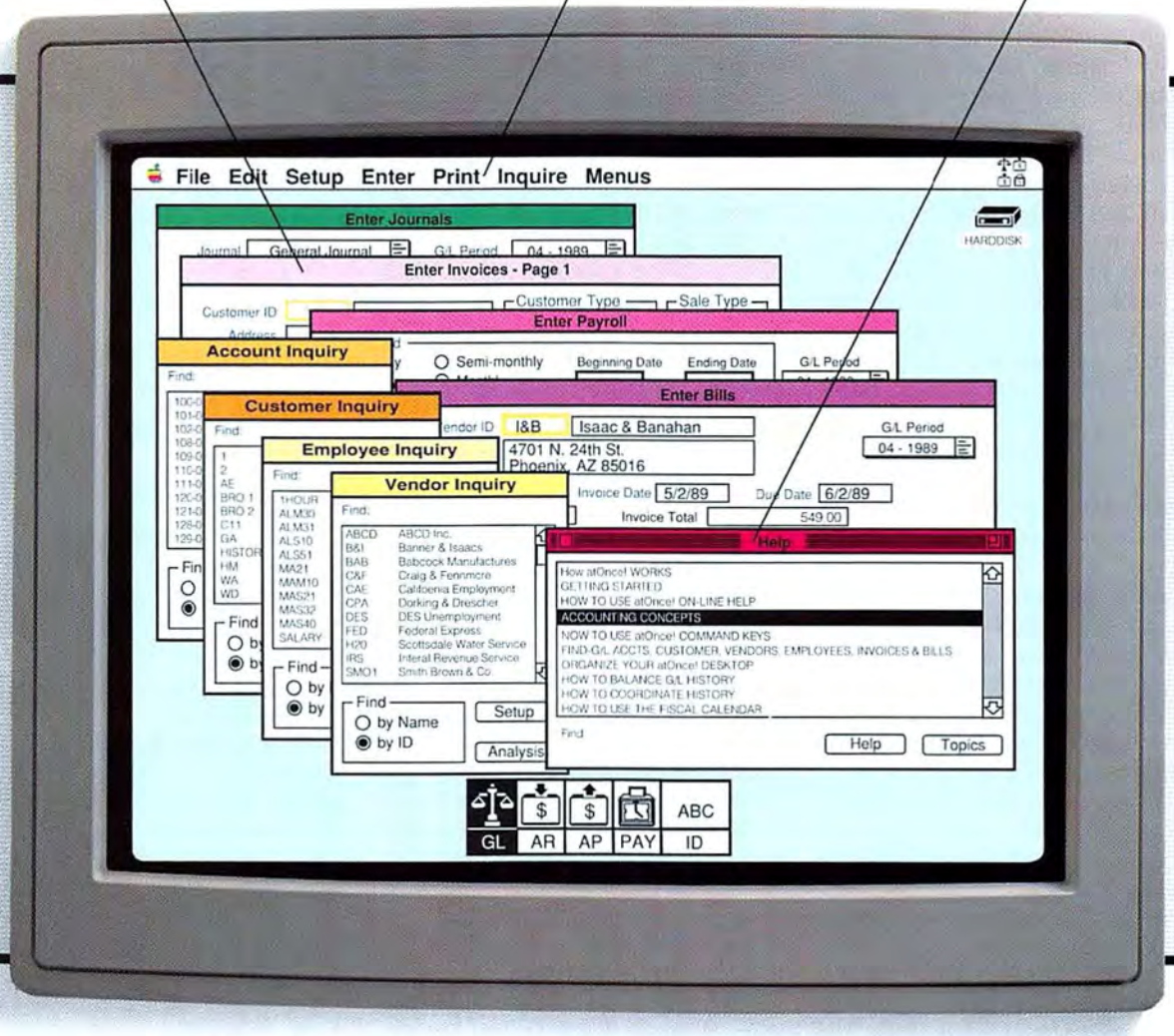
What you see is really what you get with WriteNow. The program can handle up to four columns of text. It shows the actual columns on the screen with the actual column breaks. As you edit or add text, you can see the breaks change to reflect your editing. The screen also shows headers, footers, and footnotes as they will appear when printed. The only thing that keeps the

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New Accountant Magazine February 1989

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Quick Clicks

multiple-column screen from being perfect is that the tops of the columns usually appear misaligned on-screen. Don't worry, WriteNow does that to avoid some time-consuming recalculations. When you print, everything will be properly aligned at the top.

There's one problem with the way WriteNow deals with columns. Although the actual text is handled very well, the margins and the spaces between columns are handled very awkwardly.

The space between columns is the sum of the left and right margins of the columns. There's no easy way, for example, to have the left-most column flush left and the right-most column flush right with a ¼-inch space between columns. In fact, there's no way to specify a single intercolumn width. This needs fixing.

Fonts are handled in the normal Macintosh manner, which is to say correctly. In addition to the normal style options, you can select condensed or expanded type. Expanded type often prints much better on ink-jet printers like GCC Technologies' WriteMove.

There's no provision for style sheets, other than the ability to copy and paste rulers. For me, this is WriteNow's worst shortcoming. The manual suggests several workarounds that can give something of a limited style sheet effect, but I found them involved enough to fall into the Why Bother category.

The ability to find and replace material is vital to writers. The WriteNow Find/Replace function is excellent. You can search for a single wild-card character and find and replace based on font, size, or style.

Footnotes are well done. Very long footnotes are broken over multiple pages (or columns) as necessary. Your footnotes can contain graphics as well as text. Unfortunately, your footnotes are exactly that: notes at the bottom of the page where they are referenced. There's no provision for automatically creating endnotes.

The spelling checker has an interface that I wasn't used to, and its buttons and shortcuts were also new to me. However, it's a very easy module to learn, and far less complicated than several less capable spelling checkers. It shows well-chosen suggestions in buttons, but this seems to slow things down at times.

WriteNow comes with three dictionaries. The 50,000-word dictionary is what will be used if you don't take any other action. It's a good, fairly complete dictionary, and adding and deleting entries is simple. But if you have a hard disk, you should use the excellent 100,000-word dictionary. There's also a blank (empty) dictionary that you can use to create your own custom dictionary.

For the more technically oriented, superscripts and subscripts can themselves be superscripted and subscripted to as many levels as you desire. WriteNow provides left, center, right, and decimal tabs to aid in creating tabular material, and you can easily add leaders before any tab. Leaders can be adjusted by changing font sizes.

If you're a writer shopping for a new word processor and you don't need the page-layout or indexing features of the $400 programs, WriteNow will serve all of your needs for half the price. If speed is important to you, you're not going to find a faster word processor. A few things need improvement, but overall WriteNow is a superb program and a real (and rare) bargain.

— *Steven Bobker*

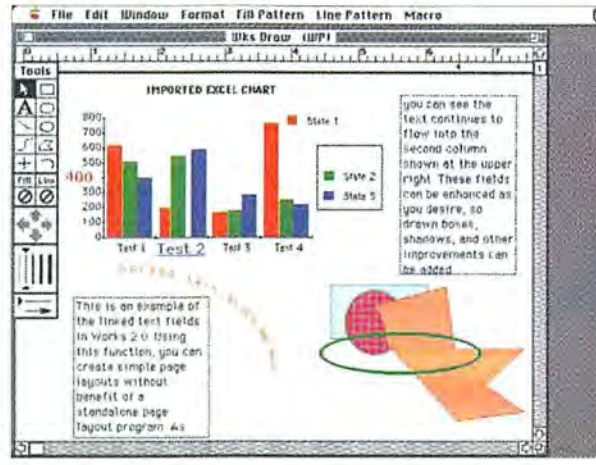
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List Price: $195
Published by: T/Maker, 1390 Villa St., Mountain View, CA 94041; (415) 962-0195.
Version: 2.0
Requires: Any Mac, including 128K Mac.
Compatibility: Mac II, IIx, and MultiFinder friendly.
Application Size: 102K; spelling checker dictionary, 108K; optional large dictionary, 222K; filters, 52K.
Copy Protection: None

NUMBER CRUNCHING

Microsoft Works 2.0



This window shows some of the most important functions available in Works 2.0's draw layer, including the ability to enhance imported Excel charts, the ability to flow text along an arc, linked text fields, and the usual draw objects.

For years, Microsoft Works has been the only acceptable integrated package for the Mac. Version 2.0 should keep things that way. In addition to the four original modules (word processing, spreadsheet, database, and telecommunications), Microsoft has added color, an object-oriented draw mode that can even be used for page layout, a macro maker, and improvements to its word processor, spreadsheet, and database.

Works' word processor isn't a power user's model, but it's more than adequate for a memo or quick letter. Version 2.0's new features include color; decimal and center tabs; a spelling checker, which is a version of Spellswell, with a 60,000-word dictionary (you can also get an expanded dictionary with a 100,000-word dictionary for $14.95 directly from Working Software); the ability to search for and replace tabs and hard returns; and the ability to print three-up mailing labels in cooperation with the database. Also, Works now supports RTF (Microsoft's Rich Text Format), so Works word-processing documents can be shared with numerous Mac word processors including WriteNow, Word, and MindWrite, as well as some programs in the DOS world.

But perhaps the most powerful and important addition to Works' word processor (and spreadsheet) is the new draw layer. This object-oriented module is reasonably full featured, offers eight colors (black, white, red, green, blue, cyan, yellow, and magenta), and makes it possible for the user to do page layout without investing in a dedicated program. While the word processor itself can't create multicolumn documents, the draw layer lets you create text objects in columns and paste text into them. More than that, it lets you link the text objects and keeps track of what text flows to and from which objects, allowing you to edit the text even after it has been placed and flowed. It works, in a limited way, very much like PageMaker. You can also use the more traditional tools to form rules, boxes, and graphics — creating quite a nice newsletter. While there's no limit to the number of columns that you can link, you can't have more than 32K worth of text in linked columns.

Nonetheless, the draw layer is surprisingly powerful and probably sufficient for most casual uses. It offers all the usual functions you would expect in a stand-alone draw program, such as grouping, layering (send to front/back), polygon and arc tools, auto scrolling, and nudge arrows that will move a selected object one pixel in the indicated direction. About the only common tool that's missing is a rotate function.

But the draw layer can do more than just create graphics and simple page layouts. One of its most powerful functions is its ability to work with imported graphics, Excel charts in particular.

If you copy an Excel chart to the Clipboard and paste it into the Works draw layer, it will initially appear as a single object. That's pretty standard. But if you select it and choose Ungroup, that single object becomes a collection of independent elements — each of which can be manipulated. So now if you want to highlight a single value along an axis, all you have to do is select it and apply whatever format you want. Excel's legends, which normally are pretty limited in their positioning, can now be disassembled, placed, and customized to your needs and tastes — in fact, you can even take a legend apart and scatter the pieces around. This feature alone is practically worth the price of admission.

Unfortunately, once you've done your manipulations, you can't return the chart to Excel, so any changes you make to the related worksheet won't be reflected in an updated chart. Still, if you've ever wanted to be able to do this type of operation, Works 2.0 is a godsend.

And if you really want to jazz up your page layouts or charts, the draw layer lets you spread text along an arc or line. The process is pretty simple: Just type some text, copy it to the Clipboard, draw (or select) a line or arc, and choose Spread Text from the Format menu. The text will now flow along the indicated path. Instead of pasting the text as a single object, Works pastes each letter as an independent object. This makes it possible to optimize the effect by adjusting the spacing one letter at a time — the nudge arrows are particularly useful. And since each letter is an independent object, you can also add whatever formats you like.

Works' spreadsheet isn't as big or complicated as that of Excel (with which it can share data in SYLK or tab-delimited formats), but it is just as powerful in some ways.

Works contains far more functions than Multiplan but not as many as Excel — coming up short mostly in the



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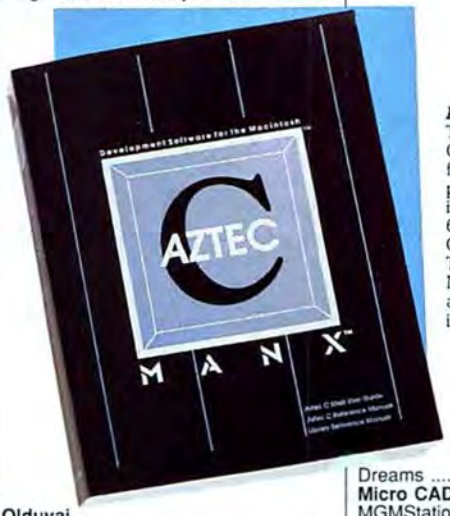


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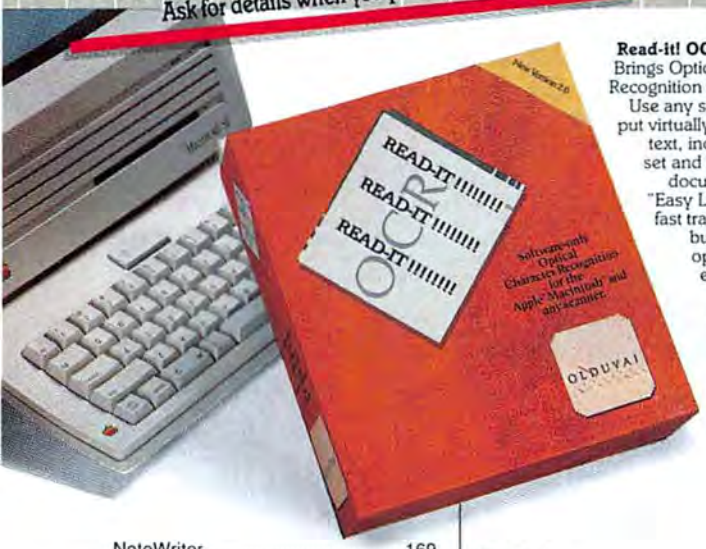
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HyperCard Getting Started 35.
PageMaker 3.0 Video Tape 35.
Word 4.0 Video Tape 35.

GAMES

Access Software Inc.
World Class Leader Board 28.
Artworx
GrailQuest 19.
Broderbund
Ancient Art of War At Sea 27.
Shufflepuck Cafe 24.
Where in the World is Carmen 27.
Bullseye
Ferrari Grand Prix or P51 ea 32.
Centron Software, Inc.
BlackJack or CrapsMaster ea 27.
CasinoMaster *(5 pack)* 55.
Discovery Software
Arkanoid 27.
Electronic Arts
Starfleet I: The War Begins 37.
Chuck Yeager Adv. Flight Trainer ... 32.
Epyx
Sub Battle Simulator 29.
HyperPress Publishing
Silver Screen 42.
Infocom
Leather Goddess of Phobos 15.
Mindscape
Balance of Power, Deja Vu ea 30.
Shadowgate, Uninvited ea 30.
Nemesis
Go Master 49.
Joseki Tutor 30.
PCAI
MacCourses 29.
MacGolf 2.0 35.
MacGolf Classic 54.
Road Racer 41.
Sierra On-Line
Leisure Suit Larry 23.
Silicon Beach
Beyond Dark Castle 27.
Spectrum HoloByte
Falcon 2.0 32.
PT109 or Gato ea 26.
Solitare Royale or Tetris ea 20.
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MacSnap 2SE or Plus II 439.
MacSnap 4S 1488.
MacSnap 8S 2975.
MacSnap SCSI Interface Port 109.
MacSnap 524E *(512k to 1 meg)* 289.
MacSnap 548E *(512k to 2 meg)* 549.
MacSnap 1024 Mem. Exp. Board Call.
MaraThon SP 189.
MaraThon Accelerators Call.
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Promodem 2400 309.
Promodem 2400M 199.
Shiva
NetModem 1200 359.
Supra
Supra Modem 2400 149.
US Robotics
Courier Modems Call.

BLANK MEDIA

B.A.S.F.
DS/DD *(box of 10)* 17.
Sony
DS/DD *(box of 10)* 18.

INPUT/OUTPUT

Cutting Edge
CE-105 ADB Keyboard 125.
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Ergotron
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Goldstein & Blair
The Macintosh Bible 21.
I/O Designs
ImageWare II Carrying Case 49.
ImageWriter LQ Ribbon Call.
IW II Ribbons-Black or Color Call.
Macinware Plus Carrying Case 64.
Macinware SE Carrying Case 75.
Kensington
Anti-Glare Filter 33.
Apple Security Kit 34.
Mac II Stand w/Cable Kit 65.
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Mobius Products
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SE Silencer 39.
Omnium Corporation
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Orange Micro
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Quick Clicks

use of named ranges and linked spreadsheets. Works also returns a *1* or *0* rather than Excel's *TRUE* or *FALSE* in logical values. In linguistic terms, Works speaks a different dialect than Microsoft's other spreadsheets, but not an entirely different language. Fixing any importation flaws shouldn't be too painful.

Version 2.0 sports an expanded number of rows (16,382 versus 10,000 in version 1.X); the number of columns (256) remains the same. Also new in version 2.0 are date and time functions, the inclusion of cell notes, and accessibility to all cell attributes in a single dialog box that appears when you double-click on a cell. Works 2.0 also lets you freeze column and row titles in place and lets you place borders around selected cells. As with the word processor, the spreadsheet supports up to eight colors of text, but for some curious reason, the color option is not directly available in the Charting mode.

The cell note feature is especially nice. One of the most dangerous things about spreadsheets is the difficulty of documenting assumptions and formulas. Works not only lets you attach these Post-its but also puts a little black square in the upper-right corner of any documented cell — alerting you that you have something to say about the contents of that cell.

The spreadsheet's graphics are also fairly powerful. While the gallery of chart styles is smaller than that of its big brother, Works gives you more control over what gets plotted and how it's presented. The spreadsheet's graphs can also be enhanced with the Draw facility. While Works charts are initially drawn in black and white, you can paste them into the draw layer, disassemble them, and add whatever colors you wish. This gives you access to the color options, although it would be nice to have the charts in color from the start.

The database has remained essentially unchanged from earlier versions, but there have been a few additions. For example, you now can paste most of the same calculations accessible in the spreadsheet into your database. You can also rename functions that add the contents of a field, on either a page-by-page or global basis.

Still, there are a few shortcomings to the database. Most critical is the inability to count the number of records that meet a selection's criteria automatically. Also, the database should be able to sort on more than one key at a time; the spreadsheet can, why not the database?

Another failing is the limited range of compatible formats. The database can import tab- and Return-delimited files, but that's it. If you ever have to deal with comma-delimited files, you'll have to convert them into an acceptable format first.

All macros are available from all applications and can be assigned Option-key equivalents. The trouble is, they can't be edited; if you make a mistake, you have to enter the whole thing from scratch.

At a list price of $295 (and a street price around $190), Works 2.0 is an excellent value. You get a worthwhile word processor, a reasonably powerful spreadsheet and database, a usable drawing package, and functional communications. Considering the amount of functionality Microsoft has added, it's remarkable that the price hasn't been raised. For users on a budget or offices needing broad-based functionality rather than specialized power, Works 2.0 could be the perfect solution.

— *Daniel J. Rosenbaum*

Microsoft Works 2.0
★★★★½



List Price: $295
Published by: Microsoft Corp., 16011 N.E. 36th Way, Box 97017, Redmond, WA 98073; (206) 882-8088.
Version: 2.0
Requires: Mac Plus, two 800K floppy drives; hard drive recommended.
Compatibility: Mac II and MultiFinder friendly.
Application Size: 588K
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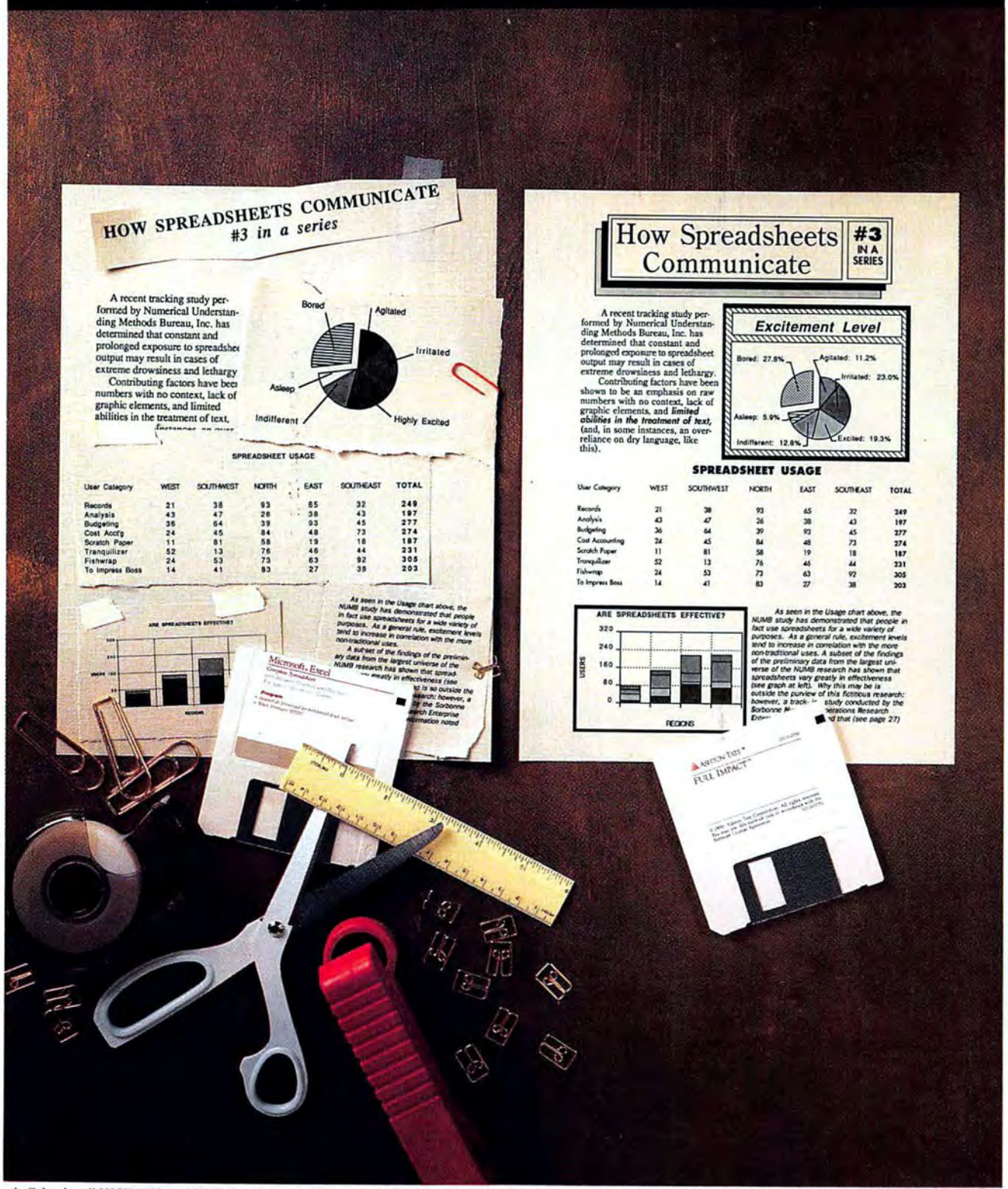


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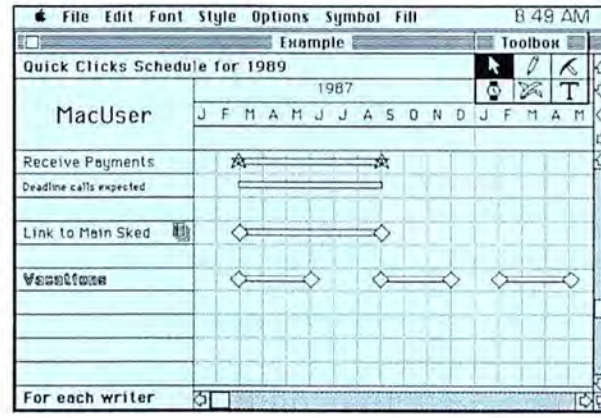
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Quick Clicks

ORGANIZATIONAL TOOLS

MacSchedule



All work in MacSchedule is done in this basic screen, which can be larger than the display. Tasks can be shown in a wide variety of ways and need not be continuous. The graphics tools at the upper right allow you to create nearly presentation-quality schedules.

Although MacSchedule looks simple, it has substantial intelligence built into it, making the creation and maintenance of schedules nearly painless. MacSchedule's main limitation is that it can produce only Gantt charts, but that's not too big a problem, since they are an industry standard and most people can understand them intuitively.

MacSchedule is graphics oriented and always uses the same basic form, which is then filled in, added to, and modified as necessary to produce the schedule you want. When you update, the same tools you used to create the schedule are there to help you change it.

Projects and jobs are planned visually. Tasks or subtasks are listed in the leftmost column, and you then use the tools provided to indicate when the tasks are to occur.

Schedules can be divided yearly, quarterly, monthly, biweekly, weekly, or daily. You can also omit the time notation to create free-form schedules.

MacSchedule doesn't limit your plans to your screen size. Quick-acting horizontal and vertical scroll bars are provided. If you have a screen larger than the standard Mac Plus or SE display, you can enlarge the working window to use the full area available. If you then open the schedule on a Mac with a smaller screen, the window will automatically resize itself to fit.

The header lines normally show dates. The four control arrows in the upper-right corner (next to the Toolbox) shift the time scales to whatever is appropriate for your schedule. You can also paste a graphic into the area above the task titles. Just keep in mind that whatever you paste will be scaled down to fit into that rather small rectangle.

The actual task lines are created using the Toolbox (in the upper-right corner of each document) and the Options, Symbol, and Fill menus. The Options menu lets you control what your schedule actually shows. You also use this menu to date-stamp tasks, add headers, narrow the columns (to fit more on a given page), and extend the time line to multiple pages. The Symbol menu lets you select from a set of predefined starting and ending symbols. The bottom item on the menu allows you to create custom symbols using a FatBits-like editor. The Fill menu gives you a choice of either a gray or black fill pattern. There is no color support in this version.

Once you have a schedule, you can copy, cut, paste, insert, or delete lines as needed. If your lines are numbered, MacSchedule will renumber them as necessary to account for additions or deletions.

Task bars can be very simple or quite complex with many overlaid milestones. The ability to combine overlay symbols with a variety of fills makes for great versatility.

Text and titles can be added anywhere you want them. However, each text string is limited to a maximum of 30 characters, so it's hard to add long notes without going into another program. Text that is placed over the grid (assuming you've left the grid turned on) can be hard to read, so MacSchedule thoughtfully provides a Clean option to block out the grid lines behind text.

The Font and Style menus offer normal fonts and a limited range of styles (plain, bold, italic, underline, outline, and shadow) and sizes (9 to 18 points). You can also align any text string to the left or right of its field, or you can center it in the field.

Schedules can be linked to other schedules — particularly useful when a schedule has more information than can be conveniently shown on a single page. MacSchedule lets you structure the information using a series of top-down, hierarchical links that the program itself creates under your guidance. Linked files are accessed by either clicking a task title (to move down to a subordinate schedule) or clicking the close box (to link up a level). You can print whole sets of schedules using the Print Nest or Print All commands. Links can be edited if necessary.

The somewhat restricted format is both the program's strongest and weakest point. In its favor, this format makes for a program that is simple to learn and use and very powerful. On the negative side, the restrictions may make the program unsuitable for your job. MacSchedule may not be perfect, but it should be considered by anyone who has to plan and coordinate jobs and projects.

— Jake Paden

MacSchedule



List Price: $195
Published by: Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301; (818) 991-6540.
Version: 1.0
Requires: 512K RAM
Compatibility: Any Mac except 128K. Mac II and MultiFinder friendly.
Application Size: 68K
Copy Protection: None



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DATABASES

MBA Series

Generation Four's MBA series (Multiuser Business Administration) is a set of 11 multiuser business applications running on ACIUS' 4th Dimension. MBA is also an automated programming environment for people intrigued by the easy 4D interface but who aren't professional programmers.

The series consists of an electronic-mail package, an inventory control system, project and telephone logs, a mass-mailing system, a telemarketing sales and ordering system, and five other databases. Each module of the full-featured applications is built on the Generation Four Application Development Shell (G4 Shell).

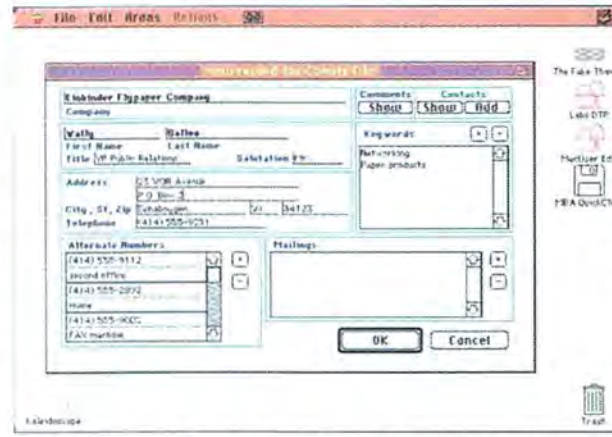
The G4 Shell grew out of Generation Four's 4D classes, and will help you learn 4D programming. For creating custom applications, the G4 Shell has done much of the hard work for you, providing most of the standard user features for custom applications. The G4 Shell consists of a modular file structure and a set of subroutines (called *procedures* in 4th Dimension).

User file functions will appear in 4D's Custom mode when you create an application. These include import/export, backup/restore, search and sort routines, and an automatic custom-report generator.

Generation Four provides many of the basic user interface features, such as standard alerts and dialog boxes. One handy thing G4 does is deliver you straight to the desktop when you quit the Custom mode, instead of dumping you into the User mode (as do most 4D applications). In Generation Four's case, the 4D User mode is for the programmer; it keeps track of the application files and reports. Users can't get into this mode unless they use the programmer's password.

The G4 Shell is set up so that programmers can combine MBA or custom applications into a single larger application. Users have the ability to switch between different files — even from a data-entry layout.

I focused on two of the applications: NetMail and Clients. The first thing you notice about them is that they're well-designed visually, with a simple interface. The screens are uncluttered and balanced, and the use of color is effective but not garish.



An input screen in MBA's Client directory and contact log application features scrolling fields, keywords for sorting, and a comments field. The Contacts button brings up the linked Contacts file, which is a record of phone calls, meetings, and correspondence.

The Client application is very useful for keeping track of phone calls, meetings, and correspondence and the actions that result from them. A mail-merge system is also included. Since this is a multiuser application, Client can be used as a working record for a group of people.

There are two main files in the Client application: Clients, who are people, and Contacts, which are records of conversations. The Contacts file includes space to write notes while you're on the phone. A dot next to a phone call reminds you that you need to follow up on it. The Clients file contains a handy keyword field for topical searches and links to the Contacts file. The reporting features let you automatically generate printouts of labels and various lists. There is also a feature for generating seven types of graphs.

NetMail is not the best mail system on the market, but it is one of the least expensive. The price is $189 for an unlimited number of users — the same price as every MBA module. NetMail is not a desk accessory, so you can either run it all the time with MultiFinder and lots of RAM or just check in with it periodically. And NetMail is a fully relational database, giving you the ability to tie it to address files or the other MBA modules.

Most of the documentation for the MBA series is contained in a DA called UserGuide. The benefit of online documentation is that everyone in a multiuser system gets a copy. However, I found the DA approach much less convenient than having paper to browse through. A printout feature would help.

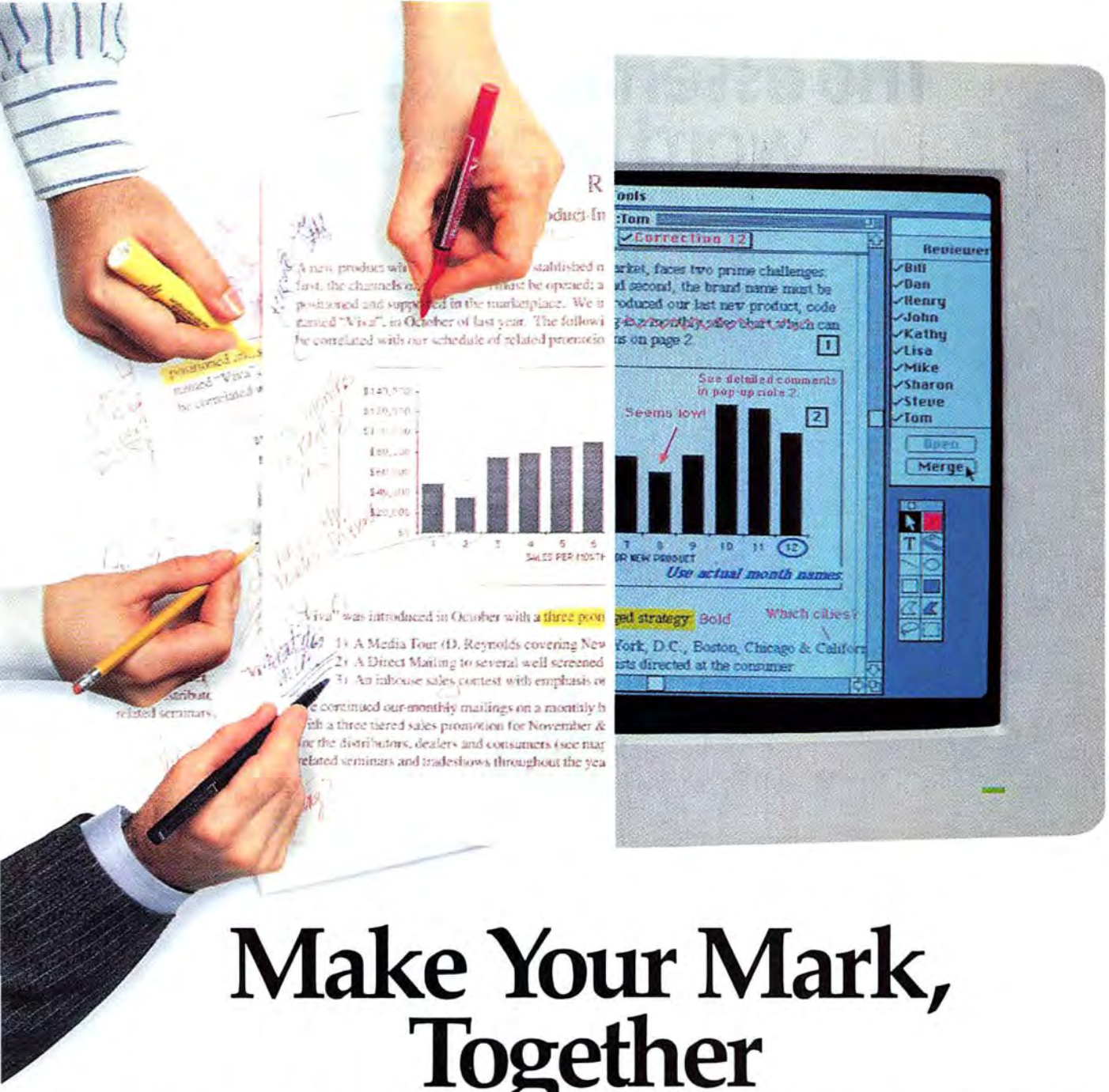
The combination of the MBA Series and version 2.0 of 4th Dimension (due out by about the time you read this) adds up to an attractive choice in the Mac database market and an excellent business network database solution. If there are little things that bug you, you can change them, and you don't need a master's in computer science to do it. If you're developing your own application, the purchase of a single module is worth $189 for the G4 Shell, which can save weeks of in-house development time.

— John Rizzo

MBA Series

$$$$

List Price: $189 per application, unlimited users.
Published by: Generation Four, 3232 San Mateo N.E. #199, Albuquerque, NM 87110; (505) 294-3210.
Version: NetMail, 1.05; all others, 1.0.
Requires: 1 megabyte RAM with two floppy drives or hard disk; ACIUS' 4th Dimension.
Compatibility: Mac II and MultiFinder friendly; multiuser over AppleShare, TOPS.
Copy Protection: None



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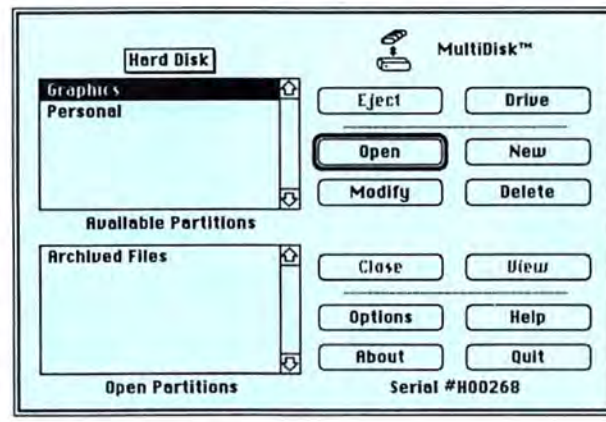
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Quick Clicks

UTILITIES

MultiDisk



Choosing the MultiDisk desk accessory displays this dialog box, which is your gateway to MultiDisk's functions. The Available Partitions list shows partitions that you can mount; Open Partitions shows those that have already been mounted.

ALSoft's MultiDisk is the newest program for partitioning Macintosh disks. Software partitioning fools the Mac into thinking that a hard disk contains several smaller disks, called volumes, each of which can be mounted on the desktop independently from the others. MultiDisk will compete directly with FWB Software's Hard Disk Partition and with Symantec's HD Partition, which is part of Symantec Utilities for Macintosh (SUM).

MultiDisk works well and has features not available from its competitors. For example, you can resize a partition without losing its contents. This means that when you create a partition, you don't have to allocate extra space initially just to allow for future growth. Resizable partitions can be shrunk as well as enlarged.

Typically, the free space on a disk is not in one contiguous area. As files are created, modified, and deleted, both files and free space become divided into separate pieces, resulting in *fragmentation*. MultiDisk has the unique ability to create partitions using all the available free space on a disk, even if that space is fragmented. If you want to make sure that all of your partitions — and your other files as well — are unfragmented, you can always use ALSoft's excellent DiskExpress utility (see January '89 Quick Clicks). MultiDisk also permits partitions themselves to be partitioned, although this ability seems to me to be treading dangerously into the dark waters of featuritis. As a final enticement, MultiDisk will convert existing FWB and SUM partitions into its own format, although the results are not resizable.

MultiDisk supports all the features made standard by its competition. Partitions can be password protected and even encrypted. You can select partitions that you want mounted automatically at startup time. If you set a password-protected partition to be mounted automatically, you will still be prompted to enter the password when your Mac boots. The newest version of MultiDisk fixes a bug that caused crashes when using encryption on a Mac SE or Plus. Encryption now seems speedy and reliable on all Macs.

MultiDisk consists of two files: an INIT that you put in your System folder and a desk accessory. Choosing the desk accessory displays a dialog box that is the interface to all of MultiDisk's functions. Power users will appreciate the numerous shortcuts available; for example, each button in the dialog box can be selected from the keyboard. Surprisingly, however, there is no way to select partition names using the keyboard.

MultiDisk does have a few limitations. You cannot erase a partition from the Finder. You have to use the desk accessory, and the arrangement is awkward. You must first unmount the partition, then click the Modify button; the resulting dialog box has an Erase button. Unfortunately, the Modify dialog box also displays the partition's password if it exists, since Modify is also used to change passwords. So, if you want to initialize a password-protected partition, you need to be sure no one is watching. Resizable partitions are to blame for the initialization anomaly; they are created with large directories that would be destroyed by the normal initialization process.

MultiDisk can create only HFS partitions, whereas FWB's Hard Disk Partition can create both HFS and MFS volumes. I found that MultiDisk crashes a Mac Plus running PowerStation 2.5. This turns out to be PowerStation's fault. Steve Brecher, author of PowerStation, identified and fixed the problem almost instantaneously. For those of you disk hackers who are handy with a file editor (translation: Don't do this unless you know what you are doing), here is the patch:

Search for `42A74EBA4A524A9F66000092` and change it to `4A80660000C42F0D2A780904` then search for `A90B4E5E4E75` and change it to `A90B2A5F6028`.

I appreciate having resizable partitions that I can create without having to unfragment my hard disk first. ALSoft's literature describes MultiDisk as "sensational" and "the ultimate." While I regard this as hyperbole, MultiDisk is nonetheless a step forward in the world of partitioning software and has found a home in my Apple menu.

— James Finn

MultiDisk



List Price: $69.95
Published by: ALSoft, Inc., P.O. Box 927, Spring, TX 77383; (713) 353-4090.
Version: 1.11
Requires: 512K; System software 4.2 or later.
Compatibility: Mac II and MultiFinder friendly.
Application Size: INIT file, 16K; desk accessory, 48K.
Copy Protection: None. Serialized; registration and number are required for tech support.

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	WriteNow 2.0	MacWrite 5.0	MS Write	MS Word 3.01
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Font size range	4-127 pts.	7-24 pts.	7-72 pts.	2-127 pts.
Maximum recommended document size (in pages)	Over 2,000	240	50	500
Number of open documents	Unlimited *	1	30	30
Mail merge	**Yes**	No	No	Yes
Number of editable, on-screen columns (WYSIWYG)	4	1	1	1
On-screen auto-numbering footnotes	Yes	No	No	No
Automatic repagination	Yes	Yes	No	No
Graphics in same line as text	Yes	No	Yes	Yes
Multiple headers and footers	Yes	No	No	Yes
Extensive Undo	Yes	No	No	No
Variable line spacing (in points)	Yes	No	No	Yes
Selective font, size, style, and ruler changes	Yes	No	No	Yes
MacUser Magazine's Best New Word Processor	**Yes**	No	No	No
Search for a word	2.4 *sec*	7.6 *sec*	9.5 *sec*	9.7 *sec*
Spell Check document	6.3 *sec*	2 *min* 34.0 *sec*	2 *min* 2.3 *sec*	1 *min* 48.0 *sec*
Copy & Paste large area	6.8 *sec*	1 *min* 0.9 *sec*	12.4 *sec*	12.3 *sec*
Change font size of document	10.7 *sec*	50.2 *sec*	17.6 *sec*	16.2 *sec*
Change font of document	10.8 *sec*	37.1 *sec*	14.1 *sec*	15.2 *sec*
'Save As' a 12-page document	3.6 *sec*	9.4 *sec*	20.3 *sec*	19.6 *sec*
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Happy Users	***Yes***	?	?	?

* Number determined by Macintosh system constraints.



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DATABASE MANAGEMENT

Acius 4th Dimension	399.	FoxBase+ Multi-User	319.
Activision		FoxBase+ Runtime	158.
Reports for Hypercard	75.	**Microsoft** Microsoft File 2.0	129.
Focal Point & Business Class Bundle	65.	**Odesta** Double Helix II	339.
Apple Computer		DataDesk Professional	***Special*** 289.
HyperCard	42.	GeoQuery	199.
Ashton Tate		**Preferred Publishers** DAtabase	75.
dBASE Mac 1.0	295.	**ProVue**	
Borland Reflex Plus	189.	Panorama	***Special*** 209.
Claris		**Software Discoveries**	
FileMaker II	237.	RecordHolderPlus	45.
Fox Software FoxBase+	208.	**TENpointO** FocalPoint II	119.



Deluxe Macplus-XKB Case by Targus

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Quick Mail	159.	**SuperMac Software**	
Farrallon		Acknowledge	329.
PhoneNET AppleTalk	9.	Multi-User SuperLaserSpool	199.
PhoneNET Din 8 or DB9	35.	**TOPS**	
Timbuktu	65.	Tops 2.0 Mac. , Tops Dos	
TrafficWatch	145.	or Net Print	119.
LaCie		Tops FlashBox	125.
Silverserver	89.	Tops Repeater	129.
Microsoft		Tops FlashCard	169.
Microsoft Mail 1-4 users	195.	InBox-MacConnection	45.
Olduvai Software Clip Share	109.	InBox-Starter Kit	149.
Font Sharer	149.	Tops Teleconnector Din8 or DB9	39.



A+ Mouse, A+ Mouse ADB by Mouse Systems

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PRINTERS & DIGITIZERS

Digital Vision		**Seikosha**	
Computer Eyes-Mac	209.	SP1000 *(Imagewriter Comp.)*	***Special*** 235.
Koala Technologies Corp.		**Summagraphics**	
MacVision 2.0 *(Digitizer)*	219.	Bit Pad Plus	325.
Mac Director	115.	**ThunderWare** ThunderScan	189.
Kurta IS ADB Tablet	255.	LightningScan	***Special*** 409.
Cordless 4 Button Cursor	65.	Mac II Power Accessory	42.

EndNote 1.1 by Niles & Associates



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EDUCATIONAL/CREATIVE SOFTWARE

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Barron's Barron's SAT	35.	Venture's Business Simulator	47.
Bible Research The Word (KJV or NIV)	165.	Deluxe Music Construction Set V2.5	84.
Bogas Productions Studio Session	49.	**First Byte** Dinosaur Discovery Kit	
String Quartet, Country or Heavy Metal	15.	or Puzzle Storybook	27.
Super Studio Session	75.	**Great Wave Software** KidsTime	26.
Bright Star Technology Alphabet Blocks	32.	Number Maze	27.
Talking Tiles	69.	Crystal Paint	27.
Broderbund		**Individual** Typing Instructor Encore	26.
Jam Session or Black & White Movies	30.	**Learning Company** Reader Rabbit	33.
Sensei Geometry, Calculus or Physics	59.	**Mindscape** Perfect Score SAT	
Type!	20.	w/The Perfect College	46.
Where in the World is Carmen SanDiego?	27.	**Niles & Associates** End Note	***Special*** 82.
Coda Mac Drums	32.	**Nordic**	
Perceive	52.	MacKids Educational Prog. *(ea)*	28.
Davidson & Associates		**Simon & Schuster** Typing Tutor IV	35.
Speed Reader II	39.	**Springboard** Top Honors	59.
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Abacus Concepts StatView II *(Mac+, SE, II w/68020 & 68881)*	349.	**Microsoft** Microsoft Works 2.0	189.
StatView SE+ Graphics	229.	Microsoft Excel 1.5	255.
Access Technology Trapeze 2.1	155.	**Nolo Press** WillMaker 3.0	34.
Ashton Tate Full Impact	249.	For the Record	29.
BrainPower ArchiText	182.	**Paracomp** Milo	159.
StatView 512 Plus	175.	**Pro Plus** WallStreet Investor V3.0	469.
Math View Professional	144.	**Satori Software** Bulk Mailer 3.2	79.
DataScan	118.	Bulk Mailer Plus	195.
Bravo Technologies MacCalc	77.	Components GL	389.
Chang Laboratories C.A.T.	229.	**Select Micro Systems, Inc.** Exstatix	219.
Claris MacProject II	395.	MapMaker	215.
Smartform Designer	319.	**Shana Corporation** Fast Forms	89.
Individual 101 Macros For Excel	37.	**SoftView** MacInUse	42.
Mainstay Capture	42.	Form Set Business Forms	55.
Mac Flow 2.0 or Mac Schedule	115.	**Synex** Mac Envelope 4.0	55.
Meta Software MetaDesign	199.	Mac Invoice	29.
Micro Planning Software		**Systat** Systat 3.2	
Micro Planner 6.0	325.	*(Specify MacPlus, SE or Mac II)*	459.
		Fastat	165.

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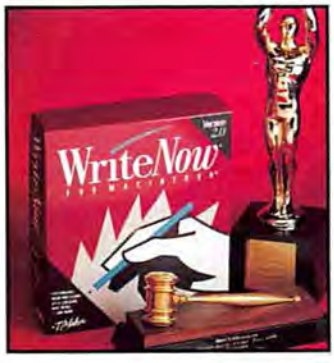


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Deneba Software		Electronic Word Finder	79.
Big Thesaurus	54.	**Sensible Software**	
Spelling Coach 3.0 Professional	105.	Sensible Grammar or BookEnds	54.
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Affinity Microsystems		**Electronic Arts** Disk Tools Plus	31.
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Affinifile	***Special*** 46.	Think'n Time	61.
Beyond Inc. Menu Fonts 2	29.	**Solutions, International**	
Borland SideKick V2.0	68.	Super Glue	52.
Bright Star Technology		SmartScrap & The Clipper V2.0	46.
Hyper Animator	79.	**Symmetry**	
Casady & Greene, Inc QuickDex 1.4A	32.	HyperDA *(Req. 512K)*	35.
CE Software DiskTop 3.0	27.	**TENpointO**	
Deneba Software Comment 2.0	54.	OpenIt!	54.



SHOWCASE F/X by Aegis

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UTILITY SOFTWARE

ALSoft Disk Express	49.	Redux	59.
Font/DA Juggler Plus	42.	ScreenGems	47.
Master Juggler	***Special*** 64.	**Olduvai Software** Icon-It!	45.
Berkeley System Design		MultiClip	59.
Stepping Out II	52.	Read-It! O.C.R. Personal	109.
Central Point Software		Read-It! O.C.R. 2.0	245.
Copy II Mac *(Includes MacTools)*	20.	**PCPC** HFS Back-Up 3.0	54.
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Fifth Generation Systems Suitcase II	44.	Diskfit 1.4	54.
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TMON	95.	myDiskLabeler w/LaserWriter Option	34.
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Microseeds INITPicker	31.	Findswell 2.0 *(Document Finder)*	36.



MacMoney 3.0 by Survivor Software

MacMoney is the user-friendly money management program for the Mac at home or in business. *MacMoney* features easy point and click transaction entry. Let *MacMoney* help you solve your cash management problems today. **$62.**

MODEMS

Abaton InterFax 12/48	329.	Practical Modem 2400SA	181.
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MacPac 2400E w/software & cable	179.	*w/Microphone & Cable)*	***Special*** 229.
Best Data Products SmartOne		**Prometheus**	
2400/1200 w/software & cable	169.	Promodem 2400M Ext.	
Epic Epic 2400 Int. SE	315.	*(Software & Cable)*	199.
Epic 2400 Int. Mac II	315.	**Supra Corporation**	
Hayes Microcomputing		Supra Modem 2400	149.
Smartmodem 1200	299.	**U.S. Robotics**	
Smartmodem 2400	449.	Courier 1200 *(Hayes Compatible)*	199.
Practical Peripherals		Courier 2400 *(Hayes Compatible)*	349.
Practical Modem Mini 1200SA	79.		



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Replace your Mac's keyboard with the ***MAC-101*** by DataDesk. The positive tactile, firm feel 101 includes a full numeric keypad, 15 function keys, 6 page control keys, and a T-style cursor pad. Includes 101-Keys desk accessory software, a powerful macro utility that allows you to exploit the full power of the function keys in almost any Mac application. Available in ADB and non-ADB versions. **$145.**

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DeskPaint 2.0 is a powerful desk accessory that creates, loads, edits and saves bitmap graphics including TIFF, MacPaint and PICT formats. *DeskPaint 2.0's* features include: Auto Trace, Air Brush, Distortion, perspective control and more **($69)**. ***ZBasic 5.0*** is an interactive basic compiler with all the tools needed to help serious Mac programmers create applications. *ZBasic 5.0* includes color and full toolbox support, an MSBASIC conversion utility and more **($99)**.

ACCOUNTING PACKAGES

Aatrix Software		**Layered**	
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Aatrix Payroll Plus	159.	Insight Expert GL, AR, or AP	455.
Bedford Software		**MECA**	
Simply Accounting	219.	Managing Your Money	127.
Chang Labs		**Monogram**	
Rags to Riches Gen. 3-Pak 3.1 *(GL/AR/AP)*	269.	Business Sense	279.
Rags to Riches GL, AR, or AP	119.	Dollars & $ense 4.0	81.
Dac Software		**Peachtree**	
Dac-Easy Light	44.	Back To Basics Professional *(GL/AR/AP/INV)*	159.
Intuit		**Survivor Software**	
Quicken	***Special*** 33.	MacMoney 3.0 *(En. Ver.)*	***Special*** 62.

MacGolf Classic by Practical Computer Applications, Inc.



MacGolf Classic puts you into a full perspective 3-D simulation of the most vivid, stimulating golf action on any computer. With beautiful 16 color graphics on the Macintosh II. **$54.**

COMMUNICATION SOFTWARE

Compuserve		**Insigna** SoftPC	409.
Compuserve Starter Kit	24.	**Software Ventures**	
Compuserve Navigator	45.	Microphone II *(Includes Glue)*	225.
DataViz		**Solutions, International**	
MacLink Plus with Cable	145.	BackFax	129.
Freesoft		**Synergy Software** VersaTerm	65.
Red Ryder V10.3	54.	VersaTerm-Pro	195.
Hayes		**Traveling Software**	
Smartcom II 3.0	88.	LAP-LINK	84.



System Saver SE, System Saver Mac by Kensington

The ***System Saver SE ($55)***, and the ***System Saver Mac ($64)*** are the perfect power control accessories for the Mac SE and the Macintosh. Kensington *System Savers* provide outlets for two peripherals and replaces your Mac's power cord. Surge suppression and noise filtering protect your Mac from any disturbances on the power line. The System Saver Mac also includes a cooling fan, and is available in beige or platinum.

GRAPHICS SOFTWARE

3G Graphics		**Innovative Data Design**	
Images w/Impact Graphics & Symbols	59.	Dreams	279.
Images w/Impact Business 1	69.	MacDraft 1.2B	149.
ABA Software		**Laserware** Laserpaint Color II	359.
Draw It Again Sam 2.0	79.	**Letraset**	
Graphist Paint II	289.	ImageStudio 1.5	275.
Adobe Systems		**Micro Illusions**	
Adobe Illustrator *88*	309.	Photon Paint	179.
Adobe Fonts *(Various volumes)*	Call	**Micro CAD/CAM** MGMStation	685.
Aldus Freehand	349.	**Micro: Maps**	
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CE Software Calendar Maker 3.1	27.	Mac the Ripper or Orchestra of Fonts	32.
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Cricket Graph	119.	**Paracomp** Swivel 3D	249.
Cricket Presents	289.	**Silicon Beach Software**	
Deneba Software Canvas 2.0 *(Includes Desk Accessory)*	***Special*** 159.	SuperPaint 2.0	129.
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Dubl-Click Software		The Curator *(Catalog Your Art)*	79.
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WetPaint: Various Vol. 1-16 *(ea)*	45.	Certificate Maker	24.
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Comic People	25.	Picture Base & Wet Paint Bundle	95.
Comic Strip Factory	44.	**Synergy** KaleidaGraph	120.
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Mini Cad +	520.	**Zedcor** DeskPaint 2.0	***Special*** 69.
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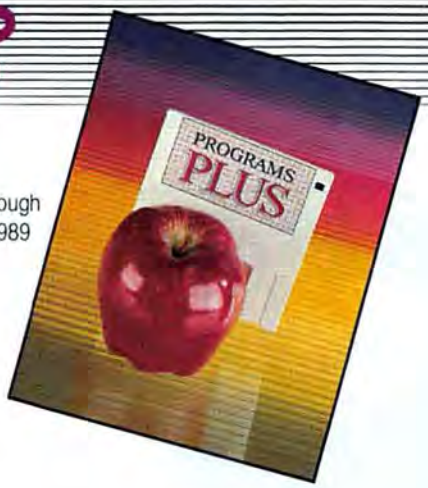
Grappler LS by Orange Micro

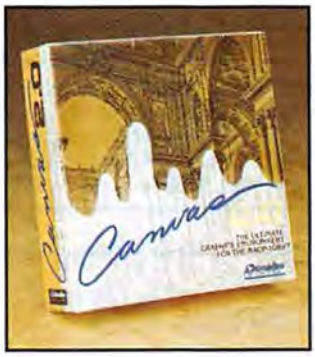
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Consulair		**Symantec** Lightspeed C	135.
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Manx		Just Enough Pascal	55.
Aztec C	65.	**T.M.L.**	
Aztec C + SDB	99.	TML Pascal II V3.0	115.
Axtec C + MPW	99.	TML Source Code Library II	42.
Microsoft		**Zedcore**	
Quick Basic	69.	ZBasic 5.0	***Special*** 99.

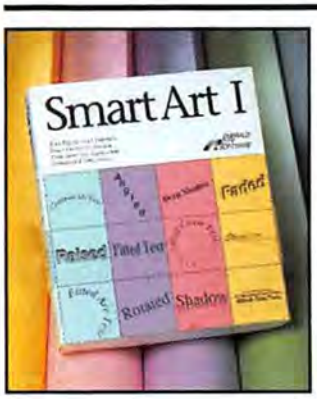


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Mac Commpack 2400 by Practical Peripherals

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Mind Write Express	145.	**Microsoft**	
Aegis Showcase F/X	***Special*** 199.	Microsoft Word 4.0	255.
Allan Bonadio Associates		**Preferred Publishers**	
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Aldus Persuasion	389.	QuarkXPress V2.0	499.
PageMaker 3.0	399.	QuarkStyle	199.
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FullWrite Professional	269.	**Symmetry**	
Broderbund		Acta Advantage	65.
DTP Advisor	47.	**T/Maker Company**	
Caere Omnipage	565.	WriteNow V2.0	***Special*** 109.
Claris MacWrite 5.0	102.	**Word Perfect Corporation**	
Emerald City Smart Art	***Special*** 95.	Word Perfect	185.
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CH Products Mirage: Quad or ADB *(Turns Joystick Into Mouse)* 39.
Mach IV Plus: Quad or ADB 65.
Cutting Edge
Cutting Edge MCK-105QK Keyboard w/Quickeys 149.
DataDesk
MAC-101 Keyboard/Beige *(128k/512k & MacPlus)* ***Special*** 145.
MAC-101 ADB Keyboard/Platinum *(Mac SE & Mac II)* ***Special*** 145.
Ergotron
Mousecleaner 360° 15.
MacTilt *(Mac, SE or II)* 68.
Farallon
MacRecorder Sound System *(Mac SE or Mac II)* 139.
Goldstein & Blair
Macintosh Bible 2nd ed. 20.
Impulse
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I/O Design
Mac Luggage in Navy or Plat.
Macinware Plus Carrying Case 64.
Macinware SE Carrying Case 75.
Imageware II Carrying Case 49.
HDware *(Hard Disk Case)* 49.
Kalmar Designs
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Double Micro Cabinet *(holds 90 disks)* 21.
Triple Micro Cabinet *(holds 135 disks)* 31.
Kensington
Mouseway *(Mousepad)* 8.
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Mobius
Fanny Mac QT *(Beige or Platinum)* 60.
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Cutting Edge 800K Drive by Cutting Edge

The ***Cutting Edge 800K*** floppy disk drive takes advantage of the newest technology to offer high speed, low noise, high reliability in a compact, stylish case. The *Cutting Edge 800K* floppy drive is compatible with all new ROM Macs including the Mac SE and Mac II. The *Cutting Edge 800K* would make an attractive addition to many Macs. **$175.**



Virex by HJC Software

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Cutting Edge 800k Drive	***Special*** 175.
Cutting Edge Wedge XL 30 Plus SCSI Hard Drive	539.
Cutting Edge Wedge XL 45 Plus SCSI Hard Drive	669.
Cutting Edge XL 30 Internal Hard Drive	439.
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MacBottom HD-21 *(20+MB SCSI Hard Disk)*	***Special*** 659.
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MSE 3 (16 Mhz w/Math Co-processor)	779.
MSE 4 (16 Mhz w/1MB & Math Chip)	1159.
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MacSnap 548 *(512K to 2MB)*	459.
MacSnap 548E *(512E to 2MB)*	549.
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MacBottom HD-70 *(70MB SCSI Hard Disk)*	***Special*** 999.
MacBottom HD 84 *(84 MB SCSI Hard Disk)*	***Special*** 1249.
Rodime Rodime 20 Plus Ext.	615.
Rodime 45 Plus *(Ext. 45MB SCSI)*	909.
Rodime 450RX *(Int. 45MB Mac SE/II)*	829.
Rodime 100 Plus *(Ext. 100MB SCSI)*	1079.
Rodime 140 Plus *(Ext. 140MB SCSI)*	1325.
Rodime 1000 RX *(Int. 100MB MacII)*	1045.
Video Technology	
Laser 800k External Drive	185.

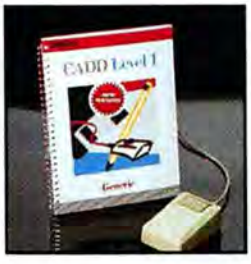


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XOR Software	
NFL Challenge	59.
Pro Challenge	29.

SP1000 Printer by Seikosha

The ***Seikosha SP1000*** printer is an Image-Writer I compatible dot matrix printer, and is compatible with all Mac's as well as Apple IIe and Apple IIgs computers. Different print options can be selected by using its front panel control buttons. **$235.**



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MacUser, February 1988

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Steve Mann, Macintosh Today August 11, 1987

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David Brandt, MacWEEK, January 19, 1988

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Jan L. Harrington, MacUser, November 1987

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Andrew Gore, The Macintosh Buyer's Guide, Spring 1988

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Notes from the Hinter Lands

I read somewhere recently that (for the Macintosh as well as those other computers) "networks and connectivity will be the desktop publishing of the 90s." If this is the level of development we're aiming for, I say we're setting our sights too low. And before any rabid DTPers decide to take out a voodoo contract on me, I am not putting down desktop publishing. DTP on the Mac is a wondrous thing, and particularly so for someone like me who started on newspapers when they were still using lead type and Linotype machines. (And, yes, that *is* a current picture at the bottom of the page.) A goodly percentage of this magazine is desktop-published. My letters to my parents are desktop-published. All this notwithstanding, I think we still have plenty of room for lots of amazing developments in DTP. However, that's a subject for another — or someone else's — column.



Anytime we begin to develop a new technology or new ways to use an existing technology, we do ourselves a disservice if we limit our view to just what we can see initially — either ex- or implicitly. We need to decide where we want to go independently of whether we currently have the means to get there; there's no sense in crippling the enterprise from the start by being shortsighted.

That's why I think we need to take connectivity far beyond the (analogous) scope and impact of desktop publishing. We need networks and connections that make those we are so proud of today look like an exhibit in the Smithsonian — an old exhibit in the Smithsonian. Why stop at companywide networks when we can be shooting for nationwide or worldwide networks? When you aim for the farthest point, even in falling short you end up well past where you'd be working on the cautious and unimaginative principle. It's not even as if this were so much pie in the blue sky. There's fiber-optic cable being installed all over the country by the telephone companies; surely they'll need help figuring out ways to use up all that bandwidth. There's the Macintosh and, in particular, the Mac interface, which offers comparatively simple and easy-to-learn access to significant computer power. We've got the *parts;* now we need the *vision.* (Can you take a hint, AT&T?)

In that context, here's what *I* think the companies and developers working on connectivity options should be shooting for — at a minimum. Any of us should be able to walk into any office, apartment, or hotel room and plug our Mac into a modular jack. (Of course, this presupposes that sometime in the next decade Apple will produce a computer that can be carried around comfortably — that's a hint, Apple.)

Once the machine has been dropped onto a desk and plugged in, we should be able to log on to a network with access to the research facilities of major libraries (the New York Public, the Library of Congress, the Bodleian, the British Museum — you get the idea). We should be able to do more than just access the card catalogs or indexes; I want to go straight to the book. If downloading large files isn't any more efficient and less time-consuming than it is now, at least we should have some equivalent of the current interlibrary loan arrangements — or have the book faxed directly to the user. I want to be able to reach not just fax machines with my computer but also telephones, my bank, shops, and all the people I have to send money to once a month (and the one or two people who send me money once a month — get the hint, Z-D?).

Whenever anyone starts talking of large electronic connections, questions of security and paranoia pop up. I am a child of the 60s and have gone through (not without reason) the full spectrum of paranoid reactions to easily accessed public records, government Big Brotherism, and so on. Even so, as I keep harping on here, there is no technology without attendant risks. Let me rephrase that: Any technology without some attendant risk of misuse is probably trivial.

I was born too early to be comfortable with the idea of doing all my reading on-screen, but not so early that I am opposed to the concept ideologically. Computer access to the *Oxford English Dictionary, Brewer's Dictionary of Phrase and Fable,* and the original (and still champion) *Roget's Thesaurus* would suit me just fine. But browsing around a library's book and periodical stacks would suit me even better. How about Mac-compatible CD-ROM versions of all those reference books (this one's yours, Microsoft)?

With only a small part of this "dream network," I could have told you where the quote in my first sentence actually came from. Only then I'd have had to think of another lead for this column.

Why stop at companywide networks when we can shoot for nationwide or worldwide networks?



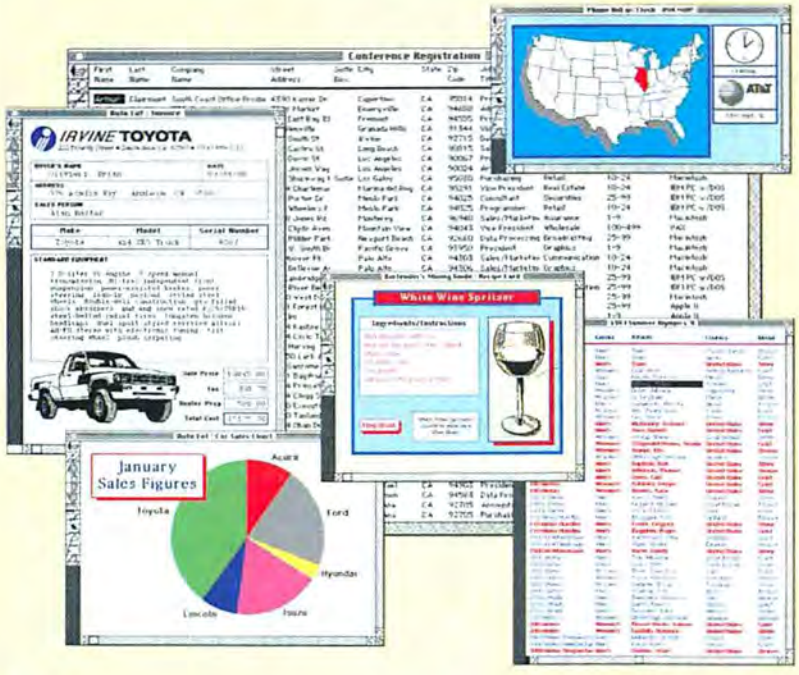
By Louise Kohl

Up Close and Personal

We've gotten several letters and

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messages responding to this column, with about half of them including some variation on the theme of "nice to hear a woman's voice." First let me say unequivocally that I have nothing but gratitude for any letters, pro or con, that we get in response to this column. It's always heartening to have some indication that someone is paying attention. On the other hand, I would like to feel that I was given this space to fill not because I am female but because someone thought I had something to say. And mine is hardly the only "woman's voice" in *MacUser;* nor did my voice suddenly appear just because there's now a picture attached to it. I am not now and never have been a card-carrying member of the women's movement, largely because I think that indulging in rhetoric and exhortation to battles that cannot be won is a waste of time. As a journalist, I have been particularly put off by the heavy-handed attempts to perform surgery by hacksaw on the English language. Language changes when society changes. And the battles to change society are the ones where we have to get our hands dirty and may not be here to see the outcome. A lot of these battles are specific to women, as I know from experience. But many are simply human battles that anyone with any integrity and a sense of self-worth has to fight. I'm more interested in the ultimate perfectibility of mankind than in the temporary superiority of any one half of it.

I would like to feel that I was given this space not because I am female but because I have something to say.



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ILLUSTRATION, BOB SCOTT

IBM versus Apple: II Years Later

This is the time of year we celebrate a pair of odd anniversaries in the personal computer business. Two years ago, on April 2, 1987, IBM introduced its new odd couple: the PS/2 PCs and the OS/2 operating system. Both products were profound changes for IBM. The PS/2 abandoned the PC and PC/AT bus designs, which were industry standards and which allowed vendors of PC compatibles to build whole companies around knocking off IBM copies. IBM also abandoned compatibility with its earlier line, at least on the physical-interface level. The OS/2 operating system would, IBM assured us, tolerate MS-DOS applications, running them in what OS/2 codeveloper Microsoft had been calling the "compatibility box." But from then on, we were told, we should look for important PC programs to be released first for OS/2, then later, if at all, for DOS.

Two months earlier, Apple had rolled out the Macintosh II, marking the most profound change of direction for the company since the introduction of the Mac itself three years earlier. Where the original Mac had been small and cute, the Mac II was big and brawny. Where previous Mac hardware configurations had been resolutely standardized, the Mac II offered IBM-style expansion slots to allow users (well, third-party vendors) to virtually rebuild the machine. And, while earlier owners of Macs had soon come to apologize for their machines' lack of computing power, the Mac II reeked of power and growth. It's now two years later. Let's look at the two years for both companies.

Over those two years, the Mac II has succeeded in achieving Apple's most important strategic goal: getting the Mac taken seriously in large corporations. From a beachhead in a very few application areas, in the hands of a relatively small tribe of zealots, the Macintosh has moved squarely into the mainstream (as in, ahem, the phrase "Mainstream Mac").

Sales of the Macintosh II soared. Apple was buoyed by the flood of cash; the company even boosted prices on the Mac II last fall. Dealers found the Mac II such a powerful sell that street prices stayed near list. Machines were often in short supply. The Mac II demonstrated a lot of what retailers call "pull through," dragging LaserWriters and AppleTalk networks out the door with it.

The success of the Mac II revitalized the Apple dealer network, giving Apple the strength to cut marginal dealers and demand of the survivors a higher level of support for Apple customers. The success of the Mac II also validated John Sculley's two basic business strategies: listening to customers rather than preaching to them, and seeing Apple desktop computers and those who use them as parts of a larger whole rather than as isolated entities.

And at IBM, what hath the PS/2s and OS/2 wrought? In the past two years, the PS/2s have brought down on IBM unprecedented disdain from such unaccustomed IBM-bashing quarters as *The Wall Street Journal* and *The New York Times*. The PS/2s' Micro Channel Architecture has been hooted at as "voodoo technology," and the incompatibilities with earlier PCs have angered customers who feel that their huge investments in PC/AT-bus machines and cards have been forgotten by IBM. Similarly, OS/2 — still big, clumsy, expensive, and without significant value for the overwhelming majority of users — has earned even more disdain and sells today as a novelty, not as a tool.

IBM's OS/2 continues to earn even more disdain and sells today as a novelty, not as a tool.

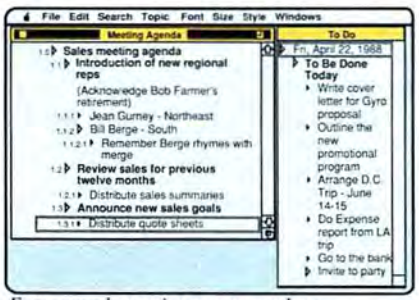
What about advancing IBM's two most important strategic directions — knocking off the PC-clone vendors and tying together the IBM product line, from mainframes at the top to PCs at the bottom, under its SNA/SAA scheme?

The PS/2s have actually boosted sales at IBM's biggest clone-making competitors, which delivered more performance and value in systems built around the standard PC/AT bus, a market that IBM simply abandoned until very recently. Sales of PC compatibles from Compaq, Tandy,

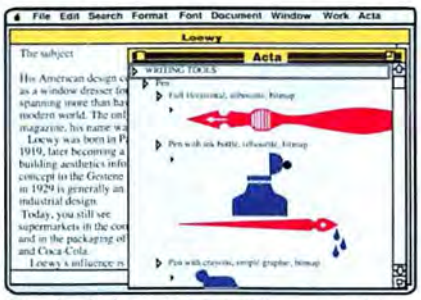


BY JIM SEYMOUR

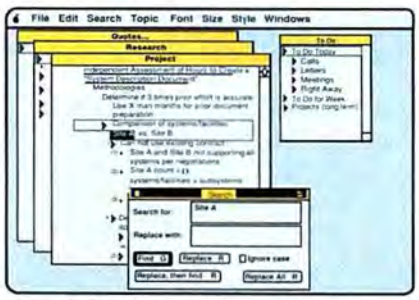
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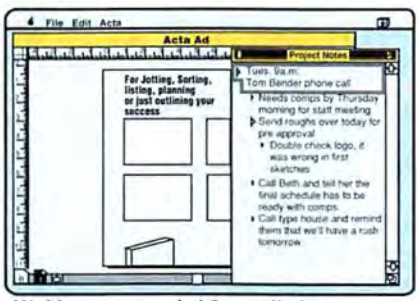
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Dell, ALR, and many others have boomed over the past two years, while PS/2 sales have until recently sunk well below Big Blue's expectations.

And how did OS/2 contribute to IBM's goals? Its delays, cost, and clumsiness have highlighted rather than solved the incompatibilities in IBM's line, drawing attention to DEC and other vendors that have avoided building systems that cannot talk to each other. IBM's failure to deliver a quality operating system for its PCs has brought into question, in many large companies, IBM's understanding of those companies' needs. PS/2 sales were so sluggish for the first year that IBM was reduced to talking about the machines' success in Europe and forced to "fix" through new models (the Models 30, 50, and 80) while essentially abandoning the sleepy Model 60. IBM's corporate profits sagged badly during this time.

The company where no one ever gets fired offered early retirement to thousands of employees and moved thousands of others out of IBM plants and offices into sales jobs. And IBM's dealers were forced, shortly after the PS/2s' introduction, back into the gray-market business.

IBM's dealer pricing for PS/2s made them profitable only when bought in huge quantities, so dealers returned to ordering many more computers than they could sell, immediately dumping their overstock onto the gray market. IBM made things worse with a quota system that made it clear that, unless dealers *did* order in large quantities, their IBM Authorized Dealer status would be rescinded.

As a result, the PS/2 gray market flourished, with machines selling at street prices as low as $10 to $15 more than IBM's deepest dealer prices. And Bill Lowe, head of IBM's Entry Systems Division and the prime force behind the PS/2s, is no longer with the company and is widely believed to have been driven out by the prospect of a career stalled by the failure of the PS/2s.

What a story. Draw your own conclusions about the next two years.

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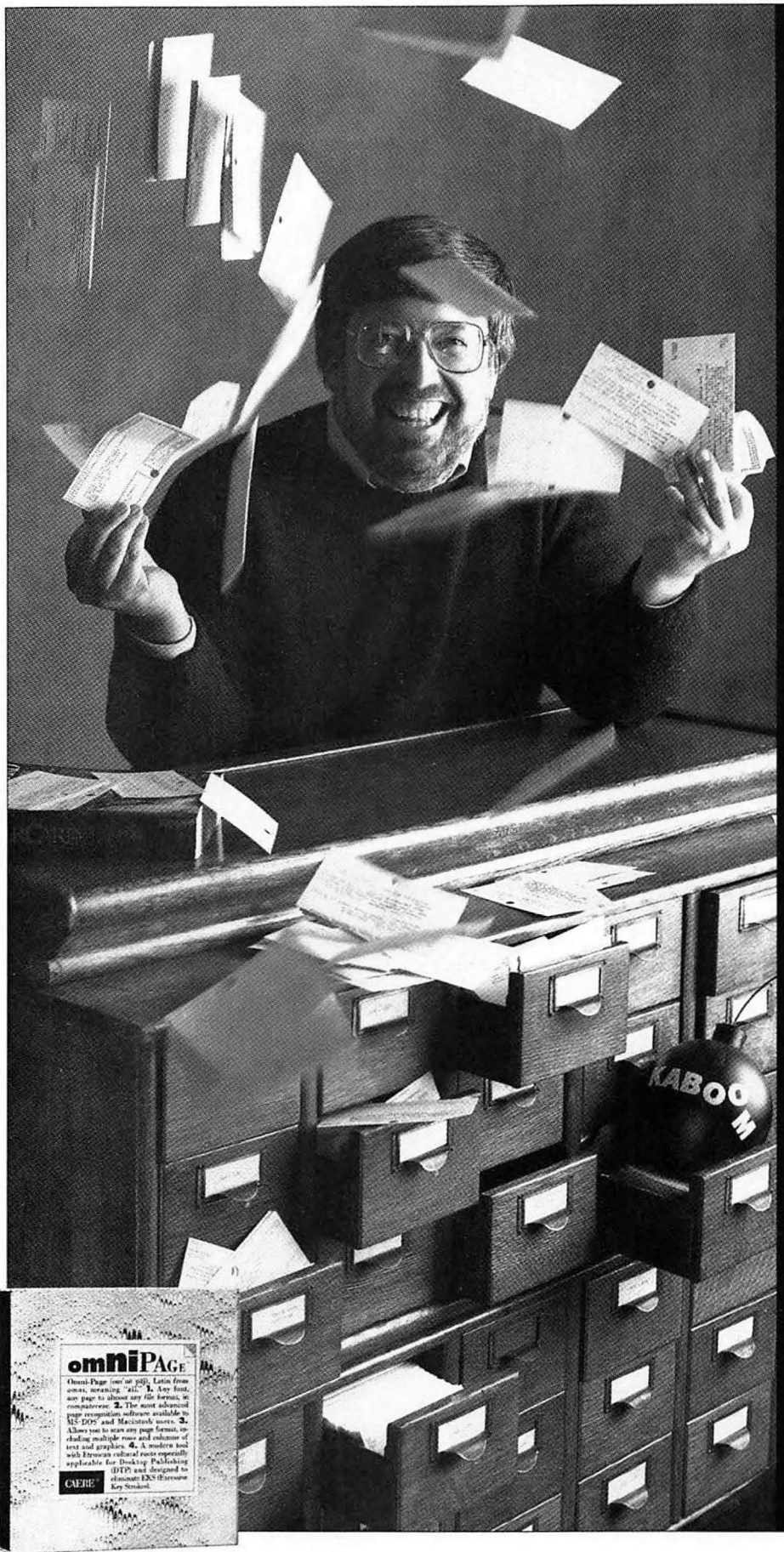
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Customer Profile

Danny Goodman

Age: 30 something.
It's hard to tell on guys with beards.

Profession: Author of the all-time best selling book, *The Complete HyperCard Handbook*, and more recently *Danny Goodman's HyperCard Developer's Guide*; software developer *(Business Class and Focal Point II)*. Described as a genuine "Renaissance Man"!

Hobbies: His idea of a good time is to scan the comprehensive quotes of the great Serbo-Croatian poets while enjoying a good glass of Chenin Blanc. Napa Valley, of course. He prefers non-computer keyboards, like the one on his Bechstein grand piano. A compulsive researcher!

His Page Recognition Software: *OmniPage*, of course. According to Danny: "In preparing a book, or working on a special project, I need to get at information quickly to avoid disturbing my work flow. With *OmniPage*, I can scan virtually any font, or font size, in any column format, and easily place it into an existing file. I'm building a library of articles, relevant to my work, on a variety of subjects."

Favorite Quote: From the *New York Times*: "*OmniPage* has the potential to do for scanners what the *Lotus 1-2-3*™ spreadsheet did for the sale of PC's."

Things Disliked Most: "Neil Simon plays done by actors from California and guys who claim to have met with beings from other planets. Most of whom also happen to come from California. No seriously, what upsets me most is some of the over-promising in this industry, especially when it comes to page recognition software."

Favorite Scan: "I'm working on a library of articles from magazines and professional journals. You might call it the ultimate scan. I want to develop a HyperCard front end, and tie it all back to *Focal Point II*, which is really the center of my *computing universe*."

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I'm ticked off. Last year around EddyAward time, I wrote a special column. The Macintosh market had grown so large that I felt some excellent business products were overlooked in the Editors' Choice Awards selection process. There just weren't enough categories, but we didn't want the Eddies to become like the Emmys, with so many categories that the awards became meaningless. I decided to make up my own awards so some of these deserving products could get the applause they deserved, and so that you could have a little extra information to help you make your next purchase decision.

Unbridled Greed

For example, in 1988 several significant word processors were introduced, but only one can get an Eddy, so I might have given an award to WriteNow 2.0 from T/Maker as the "Best Business Word Processor" because of its speed, ease of learning, and ease of use. It doesn't have the myriad features of the high-end processors, but most business users don't need all those features and can save some money by buying WriteNow. In last year's column I also made up some less serious categories for sheer entertainment. This year I might have made up a category called "Best Celebrity Endorsement" and given it to Wingz for snagging Leonard Nimoy to tout the product (but couldn't they have paid him a bit extra to shave?).

Why am I ticked off? Because, as you may have guessed by now, I can't continue the tradition of Pinstripe Pick Awards (Pinnies) that I started last year. And why not? Because software publishers are greedy and petty. After the column appeared last year, several companies called *MacUser* and demanded their statues, just as though they had been awarded Eddies. Even though I promised no statues or award ceremony and was just trying to bring their products to the attention of the people who could use them, they still wanted gold statues. In short, they got greedy. They wanted more than a pat on the back and some free publicity — they wanted gold. It took much explaining to convince them that they weren't going to get a statue, and some of them got quite miffed about it. It was an awful mess that took up a lot of people's time and resulted in some hard feelings, so it was decided that there would be no awards of any kind other than the Editors' Choice Awards in *MacUser*.

So, this year there will be no Pinstripe Pick Awards. I can't create my own categories like "Best Backup System" and let you know that an excellent way to back up your hard disk is to use Redux from Microseeds in conjunction with the 45-megabyte Syquest removable hard disk. It's a shame, too, because the business user often has different needs that a specialized award could address. Many small companies can use every mention they can get to promote their products, and "Best Small Product from a Small Company" could have meant a lot to a product like Screen Gems, a collection of marvelous little utilities for the Macintosh II, from Microseeds.

Some people have long complained about the greed of companies that make products for the Macintosh. The biggest complaint is almost always about high prices. It's true that you can buy a hard disk for an IBM PC for less than a Macintosh hard disk, but on the other hand, companies can sell a lot more hard disks for the PC than they can for the Mac; they can make up in volume what they could have made on each unit. And there's also more competition in the IBM PC market, which drives prices lower. These same arguments apply to almost any hardware product for the Macintosh — higher prices do not necessarily indicate greed. This doesn't mean that there are no greedy hardware companies — just that prices aren't the only barometer.

It was an awful mess that resulted in some hard feelings, so it was decided that there would be no awards other than the Editors' Choice awards.

What about high prices for software? The volume and competition arguments also apply here. Additionally, Macintosh software is harder to develop than software for other computers (although with OS/2 the IBM PC world is getting difficult as well). And while it may seem that a few disks and a manual can't cost much to produce, there are development costs, marketing costs, support costs, and generally a lot of overhead associated with a major product.

So, if you can't judge a company's greed by its pricing, how can you tell? Here's one way to separate the greedy from the people just trying to make an honest buck. Start with price. If a software package costs less than



By Robert R. Wiggins

ILLUSTRATION: DAVE JOLY

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$200, the company just can't be greedy. After distributor and dealer markups, a product priced under $200 isn't bringing in a very high per-unit profit. For hardware, compare prices with equivalent hardware for other computers. If the price of the Mac version is within 25 percent of the IBM version, it's probably not a greedy company. Next look at support. Companies that provide a lot of support are spending a lot of money on it, and that's usually a sign that they're not greedy. But if you can never get through, your calls are never returned, or the company charges for support, you may have found some greed. Then look at upgrade policies. Companies that offer free or reasonably priced updates are usually not greedy.

Also look at warranties. Hardware warranted for only 90 days is a possible greed indicator. For software, if the product is warranted to do anything, it's a sign that the company isn't that greedy, since most companies warrant software to do nothing. So don't mistake high prices for greed. With computer products, as with all things, you often get what you pay for. Good support, reasonable update policies, and high quality can justify those high prices. On the other hand, don't be fooled. There are a lot of greedy companies out there. I found out the hard way.

Pinstripe Picks

Some products from 1988 that could have been Pinnie award winners:

Focal Point II: (TENpointO) Could have been a shoo-in for "Best Small-Business Organizer." Much improved over the previous version.

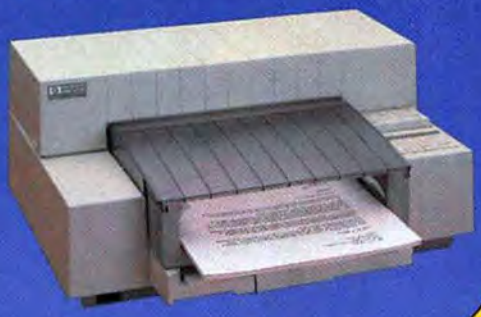
MacWorkStation: (Apple) Bringing the ability to apply the Mac interface to the mainframe world would have been good for a "Best Connectivity Product" mention.

Persuasion: (Aldus) Wish I could have mentioned it as "Best Business Presentation Tool."

MORE II: (Symantec) A powerful outliner, organizer, and fantastic presentation tool, it would have been my only real contender for "Business Product of the Year."

Laser Quality Under $1000*!

The Hewlett-Packard® DeskJet with the Grappler® LS interface offers 300 DPI at 1/3 the price.



You purchased a Macintosh for its ability to produce quality output. Problem is, you can't afford a laser printer. At $2000 and up, your only real alternatives have been dot matrix printers or regular trips to the local copy store.

Why settle for dot matrix output when you really need laser quality? The Grappler LS easily connects the DeskJet to your Macintosh, providing...

- 300 DPI resolution
- 14 pound portability
- Small footprint, smaller than an ImageWriter™ II
- Inkjet refills for less than $20
- Compatibility with H.P. LaserJet, DeskJet, and LaserJet compatibles

Only the Grappler LS provides full 300 DPI graphics (*laser quality*), and allows you to print both portraits and landscapes. With the standard Apple printer driver provided in the Grappler, you get complete WYSIWYG text and graphics because your printer acts the way your Macintosh expects it to. The Grappler LS is fully compatible with hundreds of popular software titles including Excel®, MS Word®, MacDraw II®, PowerPoint®, Super Paint™, and PageMaker®. And because the Grappler LS comes complete with cable, Apple driver, Installer, fonts and a powerful spooler, there is no need for additional purchases.

GRAPPLER LS list price: $149

Orange Micro Inc.

1400 N. Lakeview Ave., Anaheim, CA 92807
(800) 223-8029. In CA (714) 779-2772

Grappler; Apple, Macintosh and ImageWriter; Hewlett Packard, LaserJet; and DeskJet; Excel; Panasonic; are trademarks or registered trademarks of Orange Micro, Inc., Apple Computer, Inc. the Hewlett Packard Co., the Microsoft Corp., Silicon Beach Software, Aldus and Panasonic Industrial Company, respectively. Other trademarks or registered trademarks are the property of their respective owners.

Average total selling price. Printer suggested retail $995.00

Until now, Macintosh dot matrix printing has meant only two things: 9 pin, narrow carriage output for about $600, or high quality, wide carriage output for about $1400. The Grappler LQ opens up a world of dot matrix printers for the Mac, at a fraction of the cost. These include popular Epson, Okidata, NEC, Toshiba and Star Micronics models, as well as all compatibles.

Now the choice is yours!

For example, consider the Panasonic 1124 printer. With output at 180 DPI and the ability to run continuous feed or multiple part forms, this sturdy printer will get the job done with crisp and clear efficiency. The Grappler LQ uses a standard Apple printer driver so your printer will act the way your Macintosh expects it to, providing compatibility with hundreds of popular software titles (see Grappler LS above). The Grappler LQ gives you full 180 DPI output and allows you to print both portraits and landscapes (sideways on the page). And the Grappler LQ comes complete with cable, 3 fonts, Apple driver, Installer and a powerful spooler. All you supply is the Macintosh and the printer.

GRAPPLER LQ list price: $149



**Average total selling price. Printer suggested retail $529.95

The Panasonic® 1124 with the Grappler® LQ means

Mac 24 Pin Printing Under $500!**

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Please circle 16 on reader service card.



Every Jasmine hard disk drive comes complete with an impressive bundle of software that includes the highest-rated utility programs available. These include Symantec™ Utilities for Macintosh, Redux™ from Microseeds, DriveWare™ and DEScryptor™ which are our own comprehensive operating and proprietary encryption tools, DemoWare™ (including 4th Dimension, FileMaker, Illustrator88, WriteNow, QuicKeys, and Quick-Mail), plus over 5MB of Public Domain and Shareware Software.

"We don't charge extra for the software for the same reason Stradivarius didn't charge extra for the bow."

Dennis Chang, President, Jasmine Technologies, Inc.

It seems that some of our customers are a bit taken aback when they finish unpacking their new Jasmine hard disk drives. For there, staring back at them is over $500 worth* of top-rated software that they didn't order or expect. A bundle that saves them a bundle. In some cases, almost as much as the purchase price of the hard disk itself.

So the question we often get asked is: How can Jasmine afford to do that? President Dennis Chang explains.

"Actually, what we ask ourselves is just the opposite. How can we afford not to do that? We want our customers to get optimum benefit and performance from their hard disk drives and that's what our software package is designed to do. Look. When Stradivarius was making his violins, he could have charged extra for the strings and the bow. But when your goal is quite simply to be the best, you can't cut corners."



Evidently a lot of Mac users are very much in tune with that philosophy.

Because in less than three years, Jasmine has become one of the leading suppliers of peripherals for the Macintosh. With a line that not only includes hard disk drives. But tape backup systems, mass storage components, removable media systems and a remarkable new intelligent fileserver, DirectServe.™

Plus the DirectPrint™ page printer that uses liquid crystal shutter technology instead of mirrors and a laser.

Moreover, the critics have been equally impressed. Jasmine products have consistently received some of the industry's most impressive reviews.

If you'd like more examples of how we work to be the best, consider the following: Our two-year warranty is twice the industry standard. Our unconditional 30-day money back guarantee was one of the first. And our User Guides and technical support hotline personnel have created legions of enthusiastic followers.

To learn more, simply give us a call between 8am and 6pm Pacific Standard Time, Monday through Friday. Dial 1-800-347-3228 in the U.S., 1-415-282-1111 worldwide. Or write us at 1740 Army Street, San Francisco, California 94124. FAX: 1-415-648-1625.

After all, when it's easy to afford the best, why fiddle with anything less?

Jasmine

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*If purchased separately. ©1989 Jasmine Technologies, Inc. DirectServe, DirectPrint, DEScryptor and DriveWare are trademarks of Jasmine Technologies, Inc. Symantec™ Utilities for Macintosh by Symantec, Redux™ by Microseeds, 4th Dimension™ from Acius, WriteNow™ from T/Maker, Illustrator 88™ from Adobe, FileMaker® from Nashoba, QuicKeys™ and QuickMail™ from CE Software.



"Daddy says he owes his success to who he met in college, who he met in business and to Mommy who told him to save his information on Sony data cartridges."

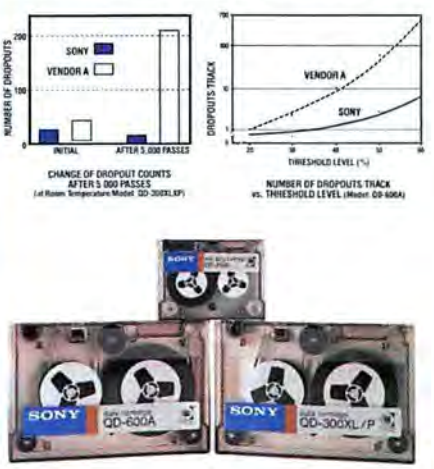
Yes, it certainly is important. Because a data cartridge is used for critical document storage. So it goes without saying that reliability is its most important asset.

And reliability is unmatched in Sony data cartridges.

After all, reliability in a data cartridge means only one thing: no loss of data. And, when it comes to that, Sony data cartridges have been proven measurably better.

As the two charts on this page show, Sony data cartridges have the lowest dropout rate of any data cartridges made. Even after 5,000 passes.

Perhaps that's because only Sony manufactures every single part of their data cartridges.



Or perhaps it's because Sony has such a long history of painstaking perfection in data storage for every media.

Including the invention of the 3.5" floppy disk format.

The benefit of all our expertise will not only help your firm, it will also help you at your firm when you tell them: To make sure your critical documents are safe, just save them on a Sony.

SONY.®
THE ONE AND ONLY.®

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THE 4TH ANNUAL EDITORS' CHOICE AWARDS

1988

It was the year of color; it was the year of viruses. It was the year of the 68030; it was the year of expensive and hard-to-find RAM. It was the year of the first PostScript clones; it was the year of higher prices. And now that it's over, it's time for *MacUser*'s 1989 Editors' Choice Awards.

BY THE EDITORS OF *MACUSER*

FOURTH ANNUAL 1989 MacUser Editors' Choice AWARDS

If you had plenty of money to spend — or could convince your boss to spend it on you — it was a good year. 1988 saw color display systems come into their own, even if the impending release of Apple's blueprint for 32-bit color may eventually make some of these early attempts obsolete. Scanners and gray-scale monitors appeared all over the place, as did image-processing hardware and software. By the end of the year, tools to create digital art, manipulate and retouch that imagery, and produce color separations were all available.

On the other hand, if you believed in the "small is beautiful" and "Apple is the friend of the common man" philosophies that characterized the Mac's early years, then 1988 left you out in the cold. Sure, a lot of the more interesting products still claim to run on a Mac Plus or even on a 512KE, but don't try doing anything very significant on those platforms. Kudos must go to T/Maker, Jasmine, and Qume for contributions that don't leave out the low-end (and low-budget) user.

Most Significant Product

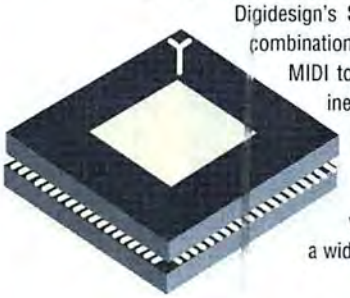
Vaccine



Vaccine, from CE Software, is a great demonstration of the philanthropic nature of Mac users. Many thanks to Don Brown for setting an example for dealing with the virus crisis by giving away such great antiviral software.

Best New Emerging Technology

Sound Accelerator Board



Digidesign's **Sound Accelerator Board**, with its combination of sound sampling, sequencing, and MIDI tools, has made the Mac the preeminent computer for music and digital signal processing. The board also has a Motorola 66000 Digital Signal Processing (DSP) chip, which we believe will open the Mac to a widespread use of sound.

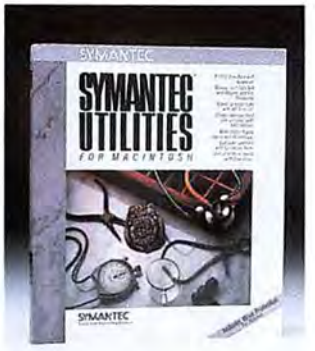
Best New Storage System

Syquest Removable Hard-Cartridge Storage System

Many manufacturers market the Syquest **Removable Hard-Cartridge Storage System** under their own labels, but we felt strongly about recognizing the technology rather than any single company's implementation of it. Syquest gives you a fast, inexpensive way to store data (from $100 to $200 per 40- to 44-megabyte cartridge — versus at least $1,000 if you were to buy a whole new hard disk with the same capacity).

Best New Utilities and Desk Accessories

Symantec Utilities for Macintosh



Symantec Utilities for Macintosh is the clear winner in this category. A very neat package that quells a basic fear — losing data — with a well-crafted product. Honorable mentions go to Fifth Generation Systems' **Suitcase II** and ALSoft's **MasterJuggler.**

Best New Professional Financial Package

Timeslips III

Time billing — tracking time spent on various clients' accounts during a day — can be well-automated by a personal computer. By far the best program we've seen for this task is **Timeslips III** from North Edge Software. The program uses a desk accessory to turn the time clock on and off and then gathers the data into a master file. If you need time billing, this will do the job.



Best New Personal Financial Package

Quicken

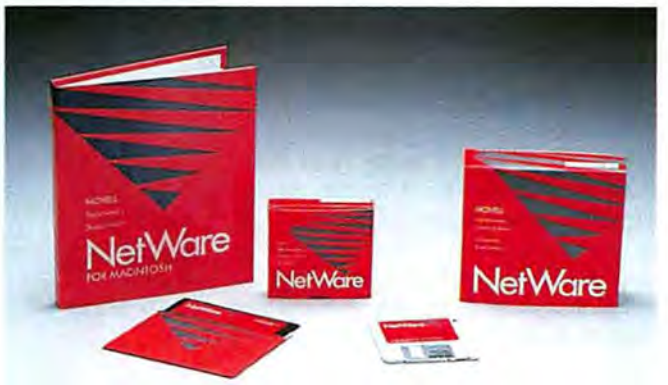


For its ability to demystify the world of accounting programs, Intuit's **Quicken** is the hands-down winner in this category. Maybe it's because the program promises nothing more than an electronic checkbook and then surprises you by delivering an entire personal or small-business accounting system — or maybe it's because it costs only $49.95. For both reasons, it received our unanimous vote.

Best New Connectivity Product (Mac to Non-Mac)

NetWare

Although it only just made our deadline — we received our full system in December — Novell's **NetWare** wins here. With an installed base of more than 2 million PC nodes, this file-server–based LAN system will open lots of doors for the Mac. And since this version uses AppleTalk Filing Protocol to make PC servers and DOS files visible and available to Mac users under the Chooser, we're favorably impressed. The only other product we considered seriously was our honorable mention, Insignia's **SoftPC,** which emulates a PC on a Mac II.



Best New Networking Product

Liaison

We chose Infosphere's **Liaison,** which offers a software-based method of bridging AppleTalk groups. This package turns your Mac into a hardware bridge — no need for an external bridging device with this low-cost software solution. Honorable mention in this category goes to CE Software's **QuickMail** electronic-mail program.



Best New Programming Language

LightspeedC 3.0

AND

Allegro Common Lisp

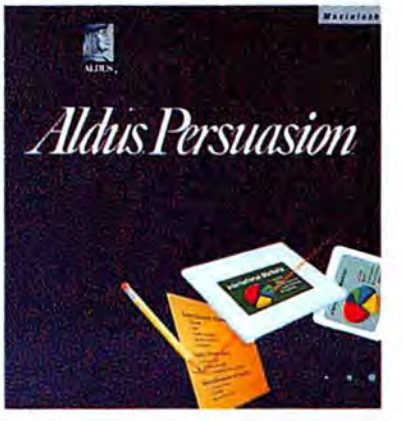


Here we have our only tie. **THINK's LightspeedC 3.0** wins because of publisher Symantec's willingness to listen to developers who used earlier versions and then do something about their suggestions. A superb source-level debugger heads the list, but there are also a number of other improvements. Its award partner is Coral's **Allegro Common Lisp,** the best implementation of this high-level symbolics and object-capable language yet to make its way to the Mac. If you're thinking artificial intelligence on the Mac, this is the language to use. Honorable mention here goes to Digitalk's **Smalltalk/V,** which almost made object-oriented programming a real development environment for the Macintosh...finally.

Best New Desktop Presentation Product

Persuasion

Aldus' **Persuasion** takes the prize because it was designed to be a visual presentation product, not a glorified outliner. This means that you'll need to think visually about your presentation and will be hard-pressed to sedate your audience by reading notes that are also shown on-screen. By opening the door to new ways of thinking, Persuasion has extended the presentation field in exciting new directions.



FOURTH ANNUAL 1989 MacUser Editors' Choice AWARDS

For the most part, Apple's clear direction with the 68030 family is upward, and that means those of us still working with lower priced systems will be increasingly left in the lurch. With nothing but a higher priced strategy in sight (this is written in January 1989; with luck, things might have changed by the time you read it), Apple has staked its claim to the high ground of high margins.

This is the fourth year we've awarded these handsome statues, the Eddies. We'll give out this year's collection at a gala awards dinner in New York City this April at the Macintosh Business Conference. The rules for eligibility are (relatively) simple: A product had to ship between October 15, 1987 (that was the deadline for last year's awards; from now on, our period follows the calendar year) and December 31, 1988.

Winning is a little more complicated. First we distributed ballots to the editorial staff during the first week of January. Then the collected votes



Best New Typographic Product

LetraStudio

If bending and manipulating type fonts with Bezier curves is your interest, then Letraset's **LetraStudio** is your tool. This product bends, distorts, tints, scales, and shapes a library of more than 100 fonts and allows full Pantone color specifications.



Best New Educational Product

NumberMaze

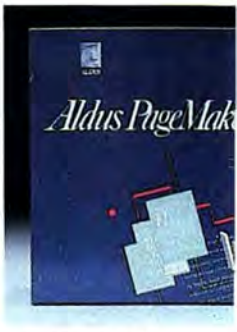
This is always a tough category because there never seem to be enough Macintosh educational programs. Our unanimous choice for 1988 was **NumberMaze** from Great Wave Software, for children aged 5 to 12. The program lets kids have fun solving mazes with invisible and disappearing walls while giving them practice in basic math skills. In *MacUser* tests, NumberMaze's variety of mazes captured and sustained the interest of a flighty 12-year-old while, at its easiest level, intriguing a bright 3-year-old.

Best New Flat-File Manager

Panorama

Who uses flat-file managers in this age of relational databases? Nearly everyone, it turns out, and this year the best one is **Panorama** from Pro-VUE. This RAM-based flat-file manager is extremely quick and agile, and it looks like a spreadsheet. However, it's much more than a spreadsheet — it is also a powerful flat-file manager. For breathing new life into old fields, Panorama wins.





Best New Page-Layout Program

PageMaker 3.0

We all love the underdog — but when it comes to page layout, the reigning favorite, Aldus' **PageMaker 3.0**, just can't be beat. An improved user interface, enhanced graphics capabilities (including automatic and custom text wrap), support for spot color, and much better word-processor features only begin to explain its strengths. Honorable mention goes to Quark's **QuarkXPress 2.0** for its color-separation capabilities.

Best New Relational Database

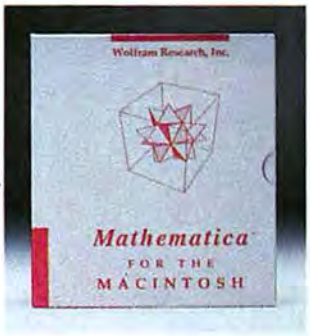
FoxBASE+/Mac



This one was relatively easy: Fox Software's **FoxBASE+/Mac.** If all it offered was the ability to read and execute DOS dBASE code, it would have been worthy of note. But it's blindingly fast and has much of the Mac look and feel grafted onto its DOS roots. It could be more graphic, but we believe that when you look at databases it is performance and dBASE compatibility that really make the difference. Honorable mention here goes to Odesta's **Double Helix II** for its visual and object-oriented approach.

Best New Science/Engineering Product

Mathematica



This was the year of **Mathematica** from Wolfram Research. Mathematica adds a whole new dimension to computing by combining the intelligence of a mathematics professor with the computational power of the Mac II. Honorable mentions in this category go to Abacus Concepts' **StatView II,** which offers powerful statistical-analysis tools, and to **Swivel 3D** from Paracomp for its 3-D modeling features.



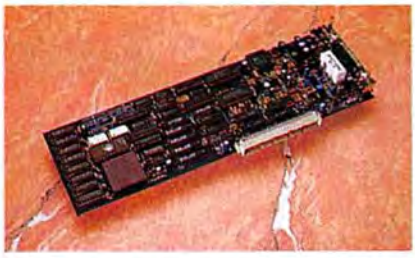
Best New Spreadsheet

Full Impact

For introducing the first substantial improvements to the Mac spreadsheet market, Ashton-Tate's **Full Impact** takes the Eddy in this category. While its memory management is weak (in part because of an ambitious effort to use virtual-memory techniques), the program's page layout, graphic capabilities, excellent macro language, and third-party developer tools put it in a class by itself.

Best New Desktop Video

Color Space II



Mass Micro's **Color Space II** board is the best of the genlock devices we've seen. This board allows graphics, type, and imagery produced by the Mac to be overlaid onto live or taped video. The system wins over its competitors for the stability and clarity of its output and gives an indication of what multimedia may look like as we enter the next decade.

Best New Telecommunications Product

Acknowledge

In this category, the Eddy goes to **Acknowledge** from Lamir for the way it has extended our expectations for telecommunications. By combining a procedural telecommunications language and MultiFinder background support, along with a run-time capability that allows custom turnkey applications to be written and distributed, the program has opened new telecommunications doors. We hope Lamir's checkered distribution problems are finally over, and we salute it for offering us a glimpse of what telecommunications might be like in the near future.

Best New Word Processor

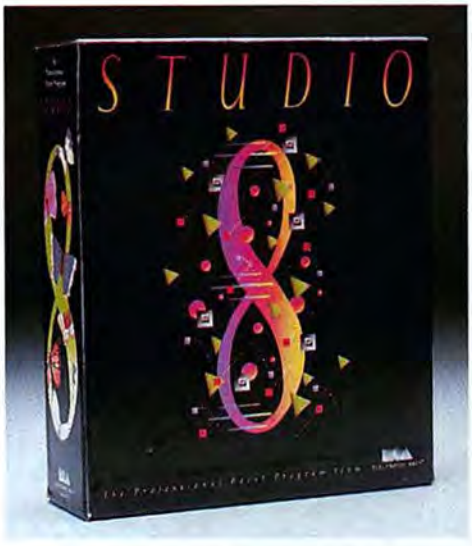
WriteNow 2.0



T/Maker's **WriteNow 2.0** wins this one hands down. While retaining the original product's simplicity and ease of use, this upgrade is a significant improvement in power. Mail-merge features, a 100,000-word spelling checker, and direct opening and saving of various file formats from within the program are part of what makes this a superb package.

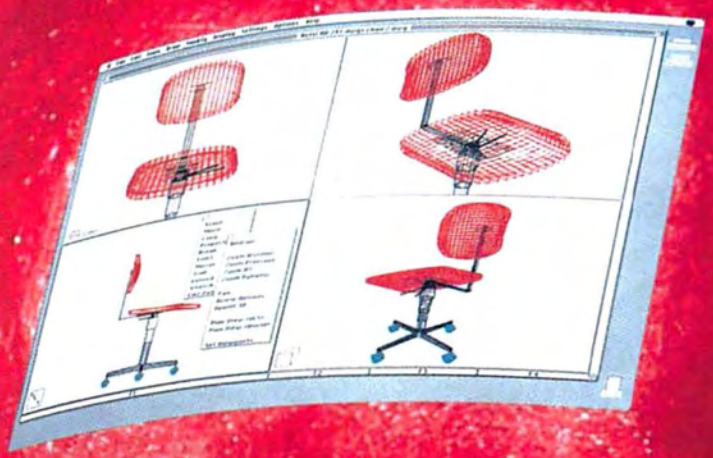
Best New Paint Program

Studio/8



This category introduced most of us to what made the Mac different: MacPaint. We're glad to report that the venerable program has found a more-than-worthy successor: **Studio/8** from Electronic Arts. This professional paint program offers every imaginable tool (including many surprises) and the ability to work with all the colors a Mac II can display. It requires a Mac II with at least 2 megabytes of RAM, but that's a small price to pay for this much power.

AutoCAD® on the Mac.® A new window of opportunity opens.



AutoCAD,® the world-standard CAD software, now runs on your Macintosh® II.

Your designs reflect the quality of your thinking. And your drawings reflect the quality of your designs. Put AutoCAD on your Mac II and nothing gets lost in the translation.

AutoCAD's extensive set of drawing tools enhances your productivity. Its effectiveness is proven every day by over 175,000 architectural, civil, construction, aerospace, electrical, cartographic, facility, industrial, manufacturing and mechanical design professionals around the world.

AutoCAD has been refined through ten major upgrades. You get menus full of powerful, high-precision drawing and editing commands, numerous drawing entities, and a multitude of easy-to-use features. You can window, zoom, fillet, scale, layer, annotate and associatively dimension, hatch, stretch and scale. And a simple click can undo anything or everything.

AutoCAD on the Macintosh also supports the features that have made Apple the acknowledged leader in user interface design, offering pull-down, tear-off, and pop-up menus, complete support for Multifinder™ and the Mac windowing system, along with file dialog boxes to make access to your drawing files quick and easy. Clipboard support allows the transfer of AutoCAD drawings to a wide variety of Macintosh applications software.

A Better Perspective. AutoCAD is an advanced three-dimensional modeler that helps you solve design challenges on your Mac the way you would with physical prototypes. AutoCAD makes 3-D easy with user-defined construction planes, dynamic viewing and multiple viewports.

You can also model complex surfaces with AutoCAD using sophisticated tools such as tabulated cylinders, surfaces of revolution, ruled surfaces and Coons patches so you can represent surfaces accurately.

For even greater utility, AutoCAD provides entity handles that allow external applications to associate alphanumeric information, such as part numbers and capacity ratings, with graphical elements in the drawing. This associativity is creating an entirely new generation of useful third-party applications software.

A Reflection of You. AutoCAD is an open-architecture system including AutoLISP,® an embedded programming language that lets you program AutoCAD to reflect your way of doing things. Add your own menus to enter your own commands, write macros, develop custom symbols and drawing functions, or program standard procedures for document production and management.

Hundreds of third-party programmers have used AutoLISP to develop entire systems that make AutoCAD perfect for applications ranging from chemical engineering to technical publishing. Many of these programs run on the Mac II and more are on their way.

Maintain Your Standards. AutoCAD is the most extensively used, most broadly supported, widely taught design software in the world. AutoCAD is backed by over 1,400 highly-trained dealers and 150 Authorized Training Centers in 60 countries. We'll make sure you get what you expect from your CAD investment. That's what standards are all about.

Opportunity knocks just once. The CAD software you standardize on today will determine your productivity for years to come. To see a demonstration at the dealer nearest you, call Autodesk at 800/445-5415, extension 25, at your earliest opportunity.



AutoCAD makes Macintosh a standard player in CAD applications ranging from architecture to automated manufacturing. And AutoCAD is the standard for communication in the CAD world. AutoCAD's file portability allows seamless transfer of drawings and applications between different platforms and operating systems — without conversion to a generic format.

AUTODESK®

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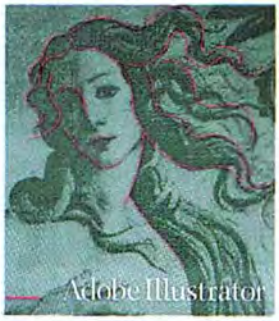
FOURTH ANNUAL 1989 MacUser Editors' Choice AWARDS

were tabulated (but not by Price-Waterhouse). Next the senior editors locked themselves into a room and argued. Eventually, we either came to blows or reached an agreement. While a few of us were carted off to the hospital, the rest carted the winners' names off to the engravers to be emblazoned on statues.



THE EDDY

The Macintosh industry's premier award, *MacUser*'s Eddy, is 18.5 inches of solid bronze and weighs 10 pounds, wet or dry. It was sculpted by well-known Mac artist Mike Saenz and given its name by *MacUser*'s art director, Lisa Orsini. A 1989 redesign substituted a Mac SE for the 128K machine in the statue's hands. The Eddy is awarded solely on the basis of quality and over the years has gone to every size and kind of company, from giants such as Microsoft to smaller ventures such as Greene and Symmetry.



BEST NEW DRAW PROGRAM

Illustrator 88

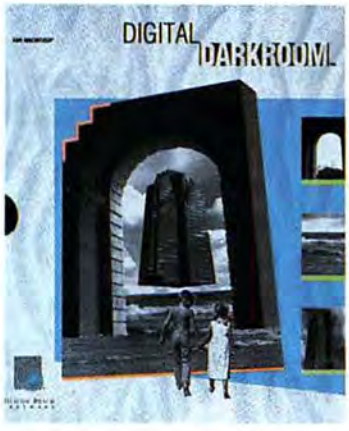
Once PostScript became the sine qua non of laser-printing languages, it was only a matter of time before someone used it to create a drawing program. In our opinion, the best of the bunch is **Illustrator 88** from Adobe, the creators of the language itself. Honorable mention clearly goes to Aldus for **FreeHand**, but Adobe's knowledge of the language gives Illustrator 88 the edge in performance.

BEST NEW IMAGE-PROCESSING HARDWARE

NuVista



Frame grabbers, boards that capture a single image from either a live film/video or scanned image, were once the exclusive domain of workstations. However, with the appearance of the Truvision **NuVista** board, frame grabbers came to the Mac. This 1988 Eddy winner offers full 32-bit color capture, and the quality of the image is startling. Honorable mention here goes to Data Translations' 16-bit **Color Capture** board, which adds genlock to a frame grabber.



BEST NEW IMAGE-PROCESSING SOFTWARE (BLACK AND WHITE)

Digital Darkroom

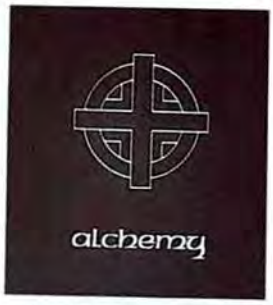
Silicon Beach's **Digital Darkroom** is the winner here. By offering the tools of digital photo retouching for both monochrome and gray-scale imagery at a very reasonable price, this product should become a part of every scanner user's arsenal.

BEST NEW IMAGE-PROCESSING SOFTWARE (COLOR)

PhotoMac

Data Translations' **PhotoMac** provides the first powerful and reasonably priced color-separation and retouching program for the Mac. By combining color capture, color correction, design changes, proofing, and full four-color cyan, magenta, yellow, black (CMYK) separations, this is a superb color prepress package that should start to make the end products of DTP as easy to create as the pages themselves.





Best New
Music and Sound

Alchemy

Blank Software's **Alchemy** takes the prize in this category. For all the action in the MIDI and sequencer side of the Mac music world, there have been few sampling editors. Alchemy is a high-end program that allows sampled sounds to be fully edited, and it should become increasingly important as sound develops into a major component of the Macintosh experience. Honorable mention goes to Farallon's **MacRecorder,** a more accessible and affordable hardware/software package that allows sounds to be sampled and captured.



Best New
Color Display
System

T16 Color Display System

In the world of color display, what you see is what you get. To our eyes, the best 8-bit color system is the E-Machines **T16 Color Display System** with its flicker-free screen, clear display, and small footprint. Honorable mention goes to RasterOps for its **Trinitron 24-bit System.**

Best New
Recreation Program

Crystal Quest



Crystal Quest with CritterEditor from Cassady & Greene was the clear entertainment winner. The first version was addictive enough, but the new version with the CritterEditor lets you import your own digitized sounds ("He's dead, Jim") and draw original bad guys, as well as edit game play itself. Honorable mention goes to **Arkanoid** by Discovery Software. One of our editors has found giving up cigarettes easier than giving up either of these games.

Best
Monochrome Display System

Two Page Display

The Radius **Two Page Display** took this one, both for the clarity of its image and for the utility of the two-page format. After working with this, going back to a 9-inch screen is pure agony. Honorable mention here goes to the Taxan **Crystal View II,** a superb monochrome system at a very affordable price.



Best New
Output Device

CrystalPrint Publisher

Qume's **CrystalPrint Publisher** laser printer and the Jasmine **Direct Print** version of the same hardware introduced the first PostScript clone to the Macintosh printing market. The liquid-crystal shutter at the heart of both of these printers can print pages faster than any of Apple's LaserWriters. If that isn't enough, the printer is about half the size and weight of Apple's, one-third less expensive than the NTX, and comes with its own on-board RISC processor and 3 megabytes of RAM.



Best New
Add-In Board

Orion SE 25

We think that you just can't beat the **Orion SE 25** from MacPEAK. This board gives 4.33 times the performance of an SE, and it's the accelerator of choice for everyone around the *MacUser* offices who works with an SE. Not only does this board result in performance that is faster than a Macintosh II, but it also turns your SE into a machine that outperforms the new Macintosh IIx. Honorable mention goes to Radius' **Accelerator 25 SE.**



Best New
Input Device

Focus S 800GS

Agfa's **Focus S 800GS** gray-scale scanner wins this one, both for the clarity of its 400-dot-per-inch (dpi) scans and for its remarkable software. What really makes this one our winner is the quality of its software — the wide variety of file output formats allows a scanned image to be imported directly into almost any application you might desire.



Best New
CAD/CAM Package

VersaCAD 2.0

Finally, a full-featured CAD program for the Mac: **VersaCAD 2.0** from Versacad. Not simply a rewrite of an MS-DOS program, this is a CAD program with all the tools and capabilities of a powerful minicomputer program, with an added touch of Macintosh. Its sophisticated Bill of Materials and Drawing Library features represent some of the best use of HyperCard we've seen to date.

DirectPrint vs.

DirectPrint: $3495* | **LaserWriter IINTX: $6900.**





As you can see, there is a noticeable difference between the new DirectPrint™ page printer from Jasmine and the Apple® LaserWriter® IINTX.

Both give you 300 dots per inch resolution. But the DirectPrint gives you a superior printed image, with a full range of deep, rich blacks and velvet grays. In a lot less time. For a lot less money.

Why is the DirectPrint better?

For starters, DirectPrint is *not* a laser printer. It uses liquid crystal technology that's as simple and reliable as the LCD in a wristwatch.

DirectPrint has fewer moving parts than a laser printer, which bounces images off a moving mirror. And fewer moving parts can mean greater reliability.

Of course DirectPrint is compatible with the PostScript® page description language, so you can print text and graphics from all your favorite software programs.

35 popular type fonts are built-in. Plus you can choose from a wide range of additional fonts produced by leading type companies such as Bitstream, Compugraphic, and The Font Company.

DirectPrint has an extremely powerful and efficient four-MIPS RISC processor (backed by 3MB of RAM) that is designed specifically for printing. So, your "when-will-it-ever-print" waits are over. Complex images requiring lots of PostScript calculations are output many times faster than laser printers costing $3,000 to $10,000 more.

Last, but not least, are these additional ways DirectPrint is better:

1. Our No-Risk 30-Day Paid-Return Trial Policy. We're so

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Laser Printers:

confident that DirectPrint is the very best page printer available for the very best price that we'll pick up the Federal Express shipping costs—both ways—if you wish to return DirectPrint after test-driving it for 30 days.

2. DirectPrint's No-Nonsense One-Year Warranty.
3. DirectPrint's easy-to-follow Owner's Guide.
4. Jasmine's Technical Support Hotline.

DirectPrint	LaserWriter
Liquid Crystal Shutter *promotes less scanning distortion*	Laser Technology
Weitek RISC Chip Set *task specific, producing faster processing times*	Motorola Multipurpose Chip Set
Casio Engine *producing darker blacks and "richer" grays*	Canon Engine
1 Year Warranty	90 Day Warranty

We rest our case.

All it takes to have a DirectPrint delivered to your home or office is a single phone call. (We gladly accept MasterCard, Visa, or American Express.)

Just dial 1-800-347-3228 in the U.S., 1-415-282-1111 worldwide.

Our sales staff is on duty Monday through Friday from 8 A.M. to 6 P.M. Pacific Standard Time.

Or you can write to us at 1740 Army Street, San Francisco, CA 94124. Fax: 1-415-648-1625.

Then, compare the Jasmine DirectPrint to *any* laser printer. And see the eye-opening differences for yourself.

After all, the proof is in the printing.

Jasmine

1-800-347-3228

Please circle 42 on reader service card.

The DirectPrint page printer works equally well with Apple and MS/DOS-based systems. It weighs only 35.2 pounds, is 15.7" wide, 13.4" deep, and 9.1" high.



Remote Control

Remote access, formerly a hardware-intensive process, brings Macs closer together through software.



When Alexander Graham Bell invented the telephone, he also pioneered remote access. Although people first saw the telephone as a communications device, they later discovered that they could also use it to gather information from the comfort of their own homes or offices in a matter of hours. Not bad, considering that the alternative was to rely on the postal service to exchange information between remote locations in a matter of weeks or sometimes months.

While the mail service may not be that much faster today, remote access has advanced so that the exchange of information involving computers takes only minutes to complete. Now Mac users can obtain files, mail, and other information from a remote Mac or network over ordinary phone lines with the help of a modem and software.

Why all the fuss over remote access? Suppose you work for a company with offices in Boston, Dallas, and San Francisco, each equipped with a network of Macintoshes. You work out of the San Francisco office and need to gather information for a business proposal you're presenting at the end of the week that must include all regions serviced by the company.

From the local network you gather the figures for the Western region, but you also need information for the Central and Eastern regions, which aren't on the office network. Calling the regional managers and explaining your needs to them is one way to get the information, but it's hard to find them in. Even if you do luck out, trying to explain to managers in Boston how you want a spreadsheet reflecting materials costs done could be frustrating, considering that they might not understand exactly what you need. At this point, mailing them a disk with a template to fill in would be the easiest solution, save for flying out to Boston yourself. But between telephone tag, mailing out templates, and getting the templates back, you won't have the necessary information for at least a week. And after that, you still have to write up the proposal.

You're never going to make it by the deadline.

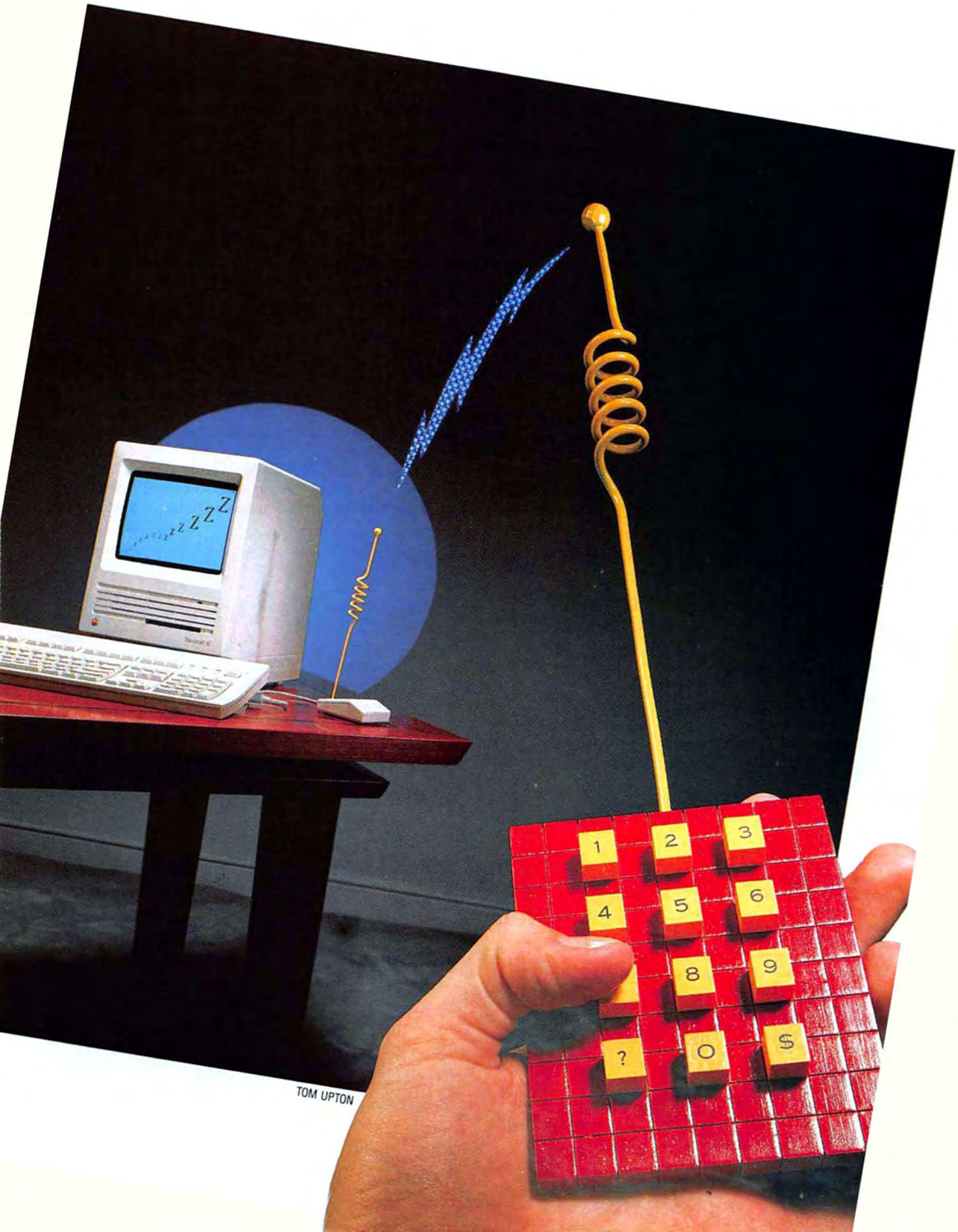
Through remote access, however, you can get to the information in Dallas and Boston almost as easily as you do at your office. You can leave mail, transfer files back and forth, and make sure the data you get is what you need.

Besides exchanging files between computers, remote access lets people in different locations work on the same project on their individual Macs simultaneously. It also allows for network management and the downloading and uploading of electronic mail.

METHODS TO THE TECHNICAL MADNESS

Remote access comes in two flavors — hardware oriented and software oriented. Hardware-based remote access involves a black box that is attached to a modem connected to a CPU. It connects an individual computer to a network or one network to

BY ANDREW GORE



TOM UPTON

another. And this access is one-way — the network into which you've dialed cannot access your Mac.

One hardware solution is the Hayes InterBridge hooked up to a Hayes modem. This setup is exclusive in that it can reach only a network where another Hayes InterBridge and Hayes modem are connected. Other less exclusive systems include a modem (by any manufacturer) hooked up to products like Shiva's NetBridge or Solano's S-Server. There's also Liaison, a software package that turns a Mac into a black box. With Liaison on the Mac taking the place of the bridging device, the only other hardware you need for remote access to another network is a modem (see our review in Bridges, April '89).

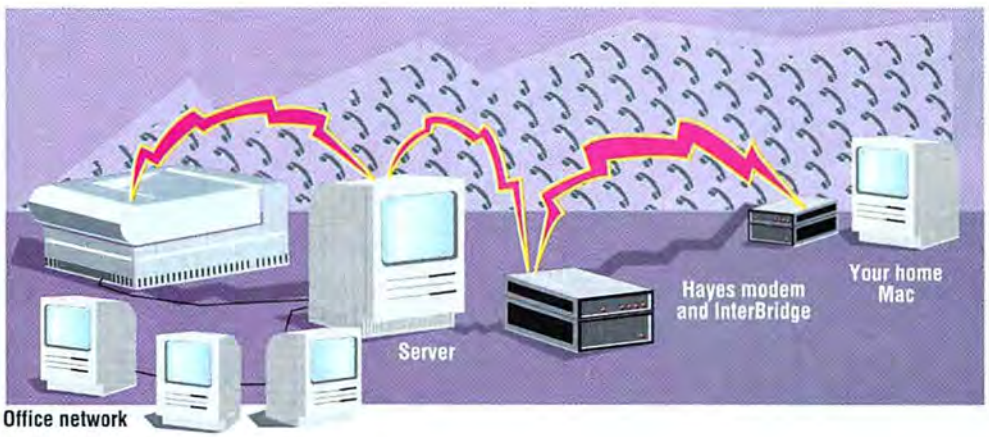
Once connected to a network, you can get to files on any attached servers as well as to network printers and other peripherals. The only thing you can't access directly with just the hardware is another computer — even though it may be hooked into the network. Farallon Computing's Timbuktu gives you access to other computers along a network, provided that they are also equipped with Timbuktu. The software will not dial into a network — the bridging device hooked up to the modem does. Timbuktu doesn't go to work until your Mac connects with the network. Once connected and running under Timbuktu, your computer in its remote location can access those on the network designated as Timbuktu hosts (that is, the Macs on the network with Timbuktu installed). From your Mac you see a host's desktop, and you can send files to the printer, create documents, and generally control the other Mac. With the latest release of Timbuktu, you can transfer files to and from the host.

You can use a software method for direct connection between two Macs in different locations. Software-based remote access can take many forms, from the familiar TTY (Teletype) emulator to sophisticated programs that allow you to operate the remote computer as if it were the local computer. Software packages that let you do this include the ones we will look at here: Timbuktu Remote from Farallon Computing, Telefinder from Spider Island Software, and Okyto from Freesoft.

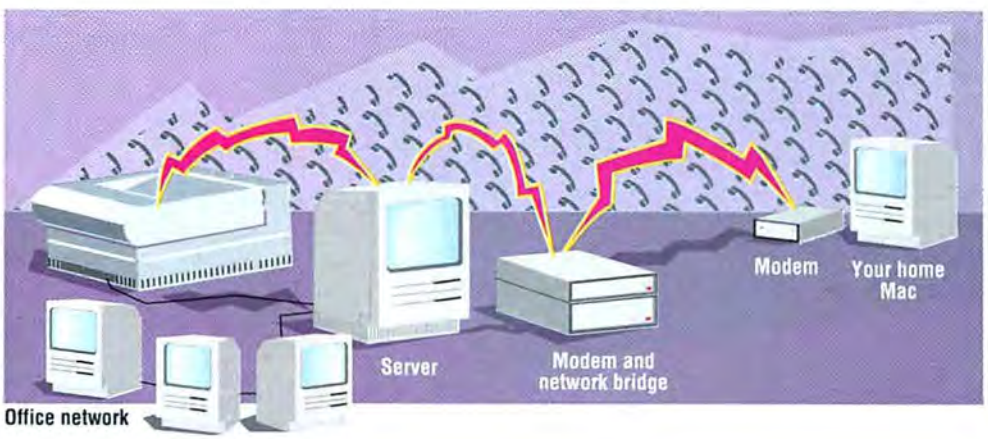
As with Liaison, a modem is the only other hardware required for this process (aside from the Mac). With Liaison, however, you dial another Mac, not a network. Software access is two-way — a user on the other end can get to the files on your Mac.

MODEM MATTERS

Seeing that software-oriented remote access requires a modem, you



Scenario 1: This is hardware-based remote access using the Hayes InterBridge and Hayes modem. A Hayes InterBridge works only with a Hayes modem and is able to communicate only with another Hayes InterBridge and modem setup. This method gives you access only to a network server and any peripherals hooked up to the network.



MARK W. SWEENEY

Scenario 2: Another hardware solution is any make of modem with Solano's S-Server or with Shiva's NetBridge. With your modem, you can dial into your office network (which is equipped with the S-Server or NetBridge). As in the first scenario, you can access only the network and any peripherals.

have some issues to consider. Your modem must be asynchronous — the signals going between the two computers need not happen at timed intervals.

For compatibility you need to know what your software requires. Okyto and Telefinder, the programs we look at here, require a Hayes-compatible modem — only Timbuktu Remote makes allowances for non-Hayes command sets. In fact, Timbuktu Remote works with any modem that operates at 9,600 bits per second (bps). If you're using another package, make sure of the modem requirements before purchasing. You're probably better off using a Hayes modem because it is a standard for most remote-access programs.

The amount of time a remote-access task takes depends largely on the speed of the modem. The faster your modem can send and receive data, the quicker you can get your work done. On standard phone lines with a modem, 9,600 bps is about the greatest speed attainable. However, there are no standards for 9,600-bps modems — 9,600-bps modems from different manufacturers cannot communicate with each other at this level. Instead, each drops down to 2,400 bps before making the connection. Nothing will happen to your data, but you've paid a lot of money for a 9,600-bps modem that operates mostly at 2,400 bps. One other important note: Modem settings between locations must be the same to prevent errors in sending.

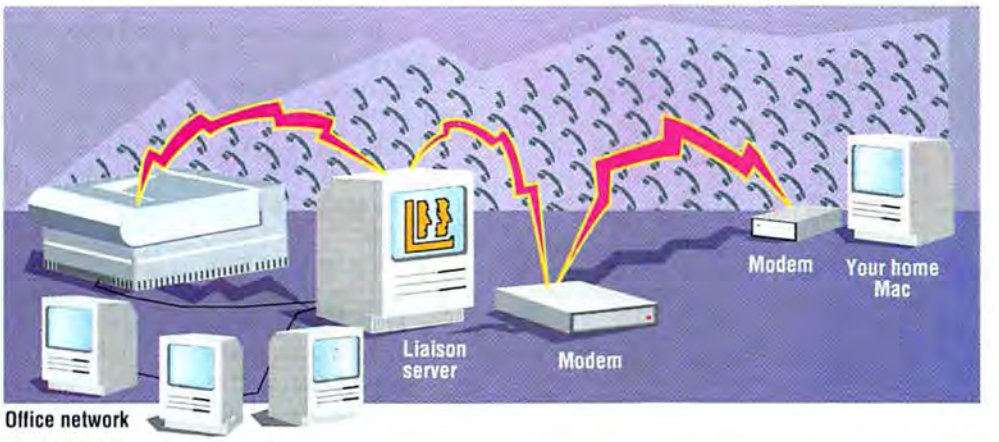
You're probably better off using a Hayes modem because it is a standard for most remote-access programs.

Once you've decided on a modem and have a Mac-compatible cable (available at any authorized Apple dealer), you need a phone line that can ring directly into your office. If you get a line that goes through a switchboard, every time a computer dials up your system, your operator will be assaulted by a high-pitched carrier detect signal.

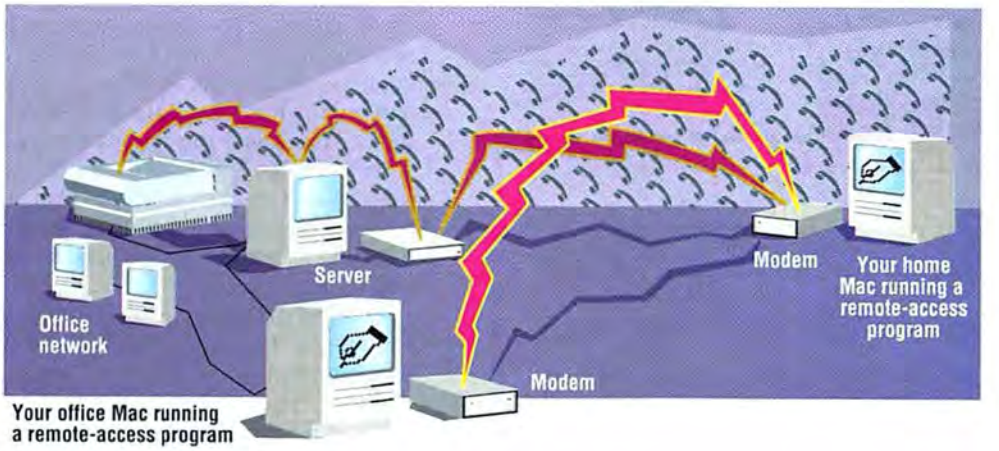
YOUR JOURNEY BEGINS

Before accessing information remotely, you must decide what you want to accomplish. A wide variety of programs allow access to another Mac over a modem, but they also have a wide range of abilities.

By definition, any remote-access



Scenario 3: Here's a hardware solution made possible with software — Liaison. With Liaison, a CPU becomes the bridge. The only external hardware needed for remote access is a modem. Liaison lets you designate which peripherals will be accessed from remote locations. A copy of Liaison must be on both computers.



Scenario 4: Software-based remote access lets you connect directly to another computer, such as your office Mac. With Timbuktu Remote, you can take over the office computer from the remote location. Telefinder lets you observe the other desktop but not control it, and Okyto is purely for transferring files.

program can list files on a remote system and transfer them to and from your Mac. Most remote-access programs will also send and receive electronic mail. In some cases the mail is just a user-created file that says something like "mail for Susan." Programs like Telefinder will supply personal mailboxes for everyone on the remote system. Some remote programs like Timbuktu Remote can actually take over the other Mac's screen and run whatever mail facility is located on the remote network. Mail lets you move files and other time-sensitive materials as fast as you could move a letter by fax machine.

FROM HERE TO TIMBUKTU

Timbuktu Remote provides high-level remote access — your system takes over the remote machine entirely. Through high-level access, you can perform such operations as safely prototyping applications or programming bug fixes and installing them on a remote system.

It also makes possible remote system support for managers. For those with more modest needs, there are lower level remote-access programs like Telefinder and Okyto that are easier to use. This ease of use also reduces the chance of damage caused by operator error.

Timbuktu Remote literally gives you the screen graphics of the remote Mac. You can move the cursor, manipulate menus and icons, and run programs just as if your Mac were the remote Mac. The screen will also update itself constantly.

Timbuktu Remote installs as an INIT when you boot up your system. It remains low-profile until you decide to connect with another Mac by choosing Timbuktu Remote from the Apple menu. You select the remote site you want to access, and Timbuktu Remote dials up and gives an attention beep to whoever is on the other system, though a second user need not be present for you to access a computer. You or the remote user must have set Timbuktu Remote on the remote Mac to answer incoming calls.

Once you've made the connection, you can do three things — type mes-

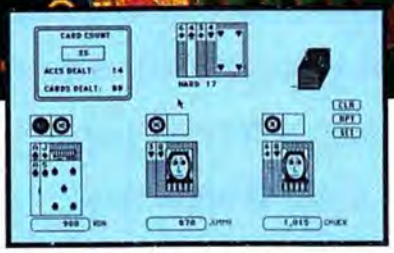


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The Business of BBSing

Hooking a couple of Macs together to exchange files back and forth is simply not enough. Any computer should have access to your Mac to exchange files, but this isn't all you've envisioned. People should be able to leave mail for each other and to post messages to anyone signing on, and those messages should be broken up by topic so people can have ongoing discussions on any subject. The files you want exchanged? Suppose you put them in a library, organized by subject and . . .

What you're talking about here is setting up your own bulletin board system (BBS) — a miniature information service open to anyone with access to your computer. What do you need to do this? Any microcomputer with a modem and a generous amount of hard-disk storage could do it with Red Ryder Host BBS from Freesoft, a BBS construction kit used by many Mac-based BBSs around the country.

Red Ryder Host BBS gives you the tools to construct menu systems and data libraries where users can store files and messages. It follows the same paging approach that CompuServe and other large information services use to communicate with users. A page can consist of a menu or a block of text or any combination thereof. Each page has a unique address that can be used to call that page up later. Some pages lead only to other pages, as you can see with instructions that are too long to fit on one screen. Pages can also can be treed, or hooked up in a hierarchical fashion that branches to different pages.

Through its system of pages, menus, and file handlers, Red Ryder Host BBS supplies you with a deceptively simple engine for generating tremendously complex BBSs. Everything from terminal-emulation preferences to roundtables and special-interest forums can be set up with this program. Bulletin boards can expand to include thousands of users.

A word of caution, though: Red Ryder Host BBS is not for the fainthearted. Being a sysop (systems operator) is very demanding and requires many hours of dedicated time to maintain an active BBS. Even though Red Ryder Host BBS does make constructing a host system relatively easy, you should be certain you have the resources to expend before diving into the information service business.

One of the best host systems available for the Mac, Red Ryder Host BBS already has a large network of experienced sysops available for help and advice in setting up your own BBS. If you're unable to find help through this network, Red Ryder Host BBS is a subtopic in GEnie — another source of information and support.

sages back and forth, transfer files, or monitor/control the remote Mac. Monitor/control is what separates Timbuktu Remote from other remote-access packages. In Monitor/control mode, you can watch what the user on the remote computer is doing, and you can take control of the computer and operate it from your Mac. Timbuktu Remote, which sells for $295, stays installed at all times and works only with another copy of Timbuktu Remote. Depending on the speed of your modem, you may find this program excruciatingly slow when you are controlling the remote computer.

CHANNELING A MAC

While it doesn't have all the capabilities of Timbuktu Remote, Telefinder creates its own niche in the remote-access market. Telefinder generates its own version of the desktop when communicating. The "desktop" will have icons for all mounted disks. There are also mailbox icons for anyone who has access to the remote computer, along with an icon for conferences (*conferences* are large mailboxes open for anyone to view and add to). In the center of the desktop is a window in which you can exchange messages if there is another user on the remote Mac.

You can't take over the remote Mac, but you can copy files and send mail. You can't observe what the other user is doing — the screen doesn't update to include new files or folders. Unlike other remote-access programs, Telefinder will communicate in text-only mode, so that a remote user can read your files even if you are not both working in the same program. Also, with Telefinder running under Multi-

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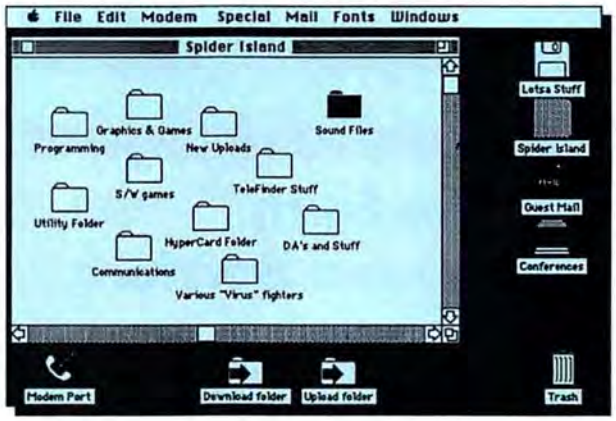
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Finder, you can perform multitasking operations such as transferring a file in the background while holding a conference with a user on the remote Mac.

To set up, you copy the Telefinder host onto the remote Mac's hard disk and the other Telefinder application onto the local Mac. Telefinder, which is available for $145, is as intuitive as the Mac itself. Anyone familiar with a Macintosh desktop will feel immediately at home in Telefinder, which runs on a Macintosh Plus or higher. To run a Telefinder session, you must set the remote Mac to receive incoming calls.



Telefinder sets up its own facsimile of the remote computer's desktop, which you see on your Mac when you call a remote computer. You can see all mounted disks on both computers along with your own Mac desktop. If a user is on the remote computer, you can choose which files that user will see by placing the files in the Upload folder. The other user cannot see your desktop.

OKYTO'S MANY DUTIES

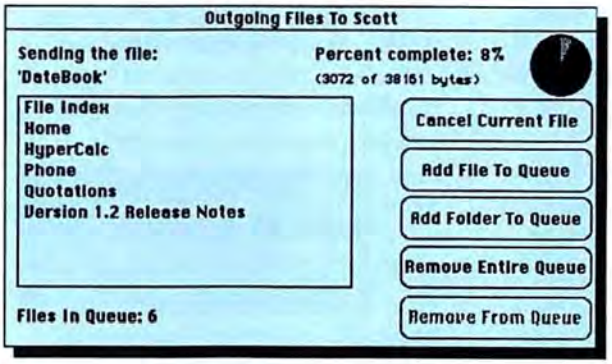
From the creator of Red Ryder comes the multitasking package Okyto. It was written with the first-time remote-access user in mind. Of the three packages mentioned here, Okyto is the easiest to use, and it will work even on the Mac 512K.

Like Telefinder, Okyto offers low-level access, file transfer, message sending between two remote Macs. You don't necessarily need a modem to use Okyto. Suppose you're lazy and don't feel like walking across the office to get a file from a coworker's computer. If the other Mac runs Okyto and is on the same AppleTalk network as yours, you can simply call over to it.

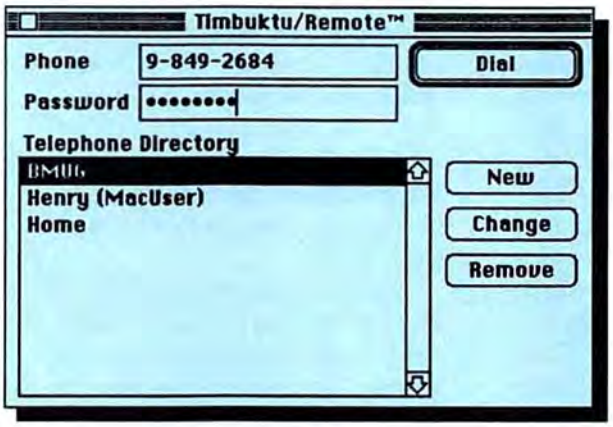
Just as with Timbuktu Remote and Telefinder, with Okyto the remote Mac must be set to receive an incoming call. Before attempting to hook up with the remote Mac, Okyto brings up a dialog box that lets you select the mode of transmission — modem (it must be a Hayes), AppleTalk cable, or ImageWriter cable.

Okyto uses windows and dialog boxes to communicate and operate, unlike Telefinder's desktop. It can still list available files and transport files back and forth without an operator being present at the remote computer. (With its scripting facility, Okyto can run unattended on both sides!)

What really makes Okyto unique is its ability to multiplex. By multiplexing, Okyto can carry on several transmissions with the remote system simultaneously. This means you can upload files, download files, and have a



Okyto will work not only over ordinary phone lines, but also over AppleTalk lines within an office. This is a great feature for those too lazy to walk over to another workstation to pick up files.



Timbuktu Remote gives you the option of taking over the remote computer. While in a session, you can see everything on the remote computer just as it appears to the local user. From your computer, you can observe what the other user does, control the other computer, and even transfer files — and do it all over ordinary phone lines.



How To Break The Font, DA, F-Key And Sound Barriers With Your Mac

If you're a power user, there are a couple of indispensible utilities designed to quicken your pulse and take you further and faster than ever before. Both are from ALSoft, the leader in resource optimization software design.

The first utility of its kind was Font/DA Juggler Plus. With it, you'll gain unlimited access to all your resources. Way beyond the ordinary font, desk accessory (DA), FKey and sound barriers of your Mac. It's 100% Multifinder compatible, too. Plus, these resources don't need to be physically installed in your System File. What's more, with Juggler Plus, all your downloadable PostScript™ font, screen font, DA, FKey and sound files can now be accessed and shared by every member of your network. Just the resources you need are now available at the click of your mouse. To save an average of 40% of your disk space, you can even compress memory intensive sounds and fonts. When you call for them, Juggler Plus will automatically decompress them on the fly. Resource Resolver is another powerful feature which will effectively resolve both sound and font ID numbering conflicts, eliminating any potential confusion. But that's just for starters.

Font/DA Juggler™ *Plus*
RESOURCE OPTIMIZER
$59.95

MASTERJUGGLER DOES EVEN MORE.

MasterJuggler is the new generation, supercharged sports model of resource optimization utilities. With all the powerful features of Juggler Plus and many more, enabling you to do much more, too. Like opening multiple applications or documents from within any application. Switching between open applications from a convenient pop-up menu. Or hiding the current application's windows before selecting another application. MasterJuggler gives you unprecedented power and flexibility. Now you can instantly see or print any name or number conflicts among the resources you are using. Plus, you can assign an interesting variety of sounds to 7 different Mac operations or you can build your own sound library by converting digitized sound files into Macintosh and HyperCard sound resources.

MasterJuggler™
RESOURCE OPTIMIZER
$89.95

Whether you're in a large network or you're one person with a Mac and a mouse, Font/DA Juggler Plus and MasterJuggler will make a big difference. All for a very small price. Call now for orders or the Bonsu dealer nearest you, 713/353-4090.

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ALSoft

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conversation with someone at the other end all at the same time. The savings on your phone bills alone will more than justify Okyto's price.

SECURITY? SACRED?

Remote access, like Pandora's opened box, brings up some troublesome issues in the face of wondrous technology. Not only do you run the risk of having an unauthorized individual get to your own files, but someone can also get to files on computers you can access remotely. To address the issue of security, all three programs employ password protection.

Timbuktu Remote has password protection at different levels. Through the Security dialog box, a user can select the access capabilities for remote users. A remote user can Control and Observe, Observe Only, or have no such privileges at all (Neither). You can permit other remote access, including Read Files From Disk, which permits the remote user to copy files from your disk; Write Files to Disk lets a remote user copy files to your disk; and Remove Files From Disk lets a remote user remove files from your hard disk.

With Okyto, a user can choose to have three entry passwords: one for Full Clearance, one that only permits a user to send files to another system, and one that only permits a user to add files to the local system. A wrong guess at a password forces the user to exit the connection and reconnect before trying again. There is no limit to the number of guesses — except, of course, save for the user's patience.

Telefinder has only one initial password window, which comes up before you attempt to dial for a connection. A user can set up for as many as three attempts at the correct password and as few as one try before the connection is aborted.

Perhaps the best form of security with remote access is a callback modem. An initial call to a remote Mac sends a message that you want access. In the interim, the remote Mac checks to see if you're in a user database; if you are, the modem on the remote machine returns your call and automatically logs you on to the Mac.

COMMUNICATIONS IN THE NEW AGE

William Gibson, author of the best-seller *Neuromancer* (West Bloomfield, Mich., Phantasia Press, 1986), foresees a world that is wired from end to end by a huge network of computers. Through this network, data is exchanged and business deals are made. Also in the network are data thieves, modern-day cowboys who travel communications' back roads, ready to raid corporate memories in search of data. In Gibson's world as in our own, information is power.

In Gibson's vision of the future, people work at home. The computers in their houses let them work without need of an office. Companies as we know them are gone. With a facility in each employee's residence, the need for great office complexes has evolved into a need for great complexes of readily accessible data.

Sure, this may sound like science fiction. But in fact, a similar scenario is happening now. More and more employees work at home hooked into the company computer. As computers become more sophisticated and communication becomes more refined, the number of workers who work out of their house, car, or anyplace where there is an outlet to plug into is going to grow. Remote access will turn the back road of networks into tomorrow's super highways.

Directory

Farallon Computing
2201 Dwight Way
Berkeley, CA 94704
(415) 849-2331
Timbuktu Remote, $295
Timbuktu, $145

Freesoft
150 Hickory Drive
Beaver Falls, PA 15010
(412) 846-2700
Okyto, price not determined at press time.

Spider Island Software
P.O. Box 18735
Irvine, CA 92713
(714) 669-9260
Telefinder, $145



How To Get Extra Hard Drives Without Paying For Them

Imagine being able to put your hands on additional hard disks at will. First one and then another. Until you have all the extra disks you need at your fingertips. MultiDisk is the indispensable utility from ALSoft which lets you effectively add disks through an innovative technique called disk partitioning.

With MultiDisk, you can divide your original disk into multiple new disks. By grouping files into separate partitions containing fewer files, you can also achieve faster access, greater file protection against directory damage and virus attack as well as improved overall disk performance. That's especially important if you're a power user with lots of files.

MultiDisk™
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$69.95

When you partition with MultiDisk, you can also assign a separate password to each partition. Plus, you can quick-encrypt the files in any partition to achieve an even higher level of security.

Whether you're in a large network or you're one person working with a Mac and a mouse, MultiDisk will make a big difference. All for the small price of just $69.95. Call now for orders or the Bonsu dealer nearest you, 713/353-4090.

B901

How To Eliminate Holes In Your Hard Disk

Each time you use your Mac, your hard disk gets a little slower. The big culprit is something called fragmentation. It occurs whenever you add or change files, and it causes parts of files to wind up here, there, and all over your disk. Like holes in Swiss cheese. Soon, there are more holes than cheese. Which means your hard disk gets slower and slower, and so does your Mac.

How do you get organized and up to speed again? Optimize with the very best Optimization software you can get for your Mac. It's called DiskExpress from ALSoft. DiskExpress does it all, too. Like priortizing all files, compacting big desktop files, graphically displaying free space, detecting potential problem areas on your hard disk, effectively erasing free space to safely prevent unauthorized file recovery plus lightning fast file defragmentation to get your files back together and whole again.

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Whether you're in a large multi-user network or you're one person working with a Mac and a mouse, DiskExpress can make a big difference. All for the small price of just $69.95. Call now for orders or the Bonsu dealer nearest you, 713/353-4090.

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IMAGINE HOW CONFINED YOUR WORLD WOULD BE WITHOUT FASTPATH.

One of the nice things about the Macintosh is that every one comes with a network built in.

It's called LocalTalk, and it works perfectly if your need is to connect a small group of Macintoshes and peripherals, and speed is not of the essence.

WHEN THINGS GET A LITTLE CROWDED.

Unfortunately the problems begin when you need to link lots of Macs together, and you want the network to run at speed.

Then, it all becomes too much for a LocalTalk network.

And if you want to talk to a non Mac environment, it gets to be almost impossible.

Unless, that is, you invest in a FastPath, Kinetics' answer to Macintosh connectivity.

WHY YOU NEED YOUR OPTIONS OPEN.

The Kinetics FastPath is a gateway that connects LocalTalk networks to Ethernet networks. It not only lets groups of Macs talk to each other over a high-speed Ethernet backbone, it allows them to talk to DEC VAXes, UNIX hosts and workstations, PCs, remote networks and other Macs.

FastPath immediately increases overall network performance and productivity. And because you can run software based on AppleTalk, TCP/IP or DECnet protocols, it keeps your connectivity options open for the future.

Your large network is made even more manageable because of the innovative LAN Ranger software included with every FastPath. And LAN Ranger uses the Macintosh interface to provide the network manager with the first graphical view of an AppleTalk inter-network.

THE BEST CONNECTED MACINTOSHES.

FastPath is just one of our Macintosh to Ethernet networking products. We have a complete range of hardware and software connectivity solutions that open up a world of possibilities, including our EtherPort line that lets you connect Macs directly to Ethernet.

It's a smart business move to get a basic grounding in networking before you commit yourself. So, please call for a free copy of Kinetics' Network Primer, our user oriented introduction to networking.

And, of course, feel free to call us anytime and ask for more information about connecting Macintoshes to Ethernet LANs: call 1-800-433-4608; in California, call 415-947-0998.

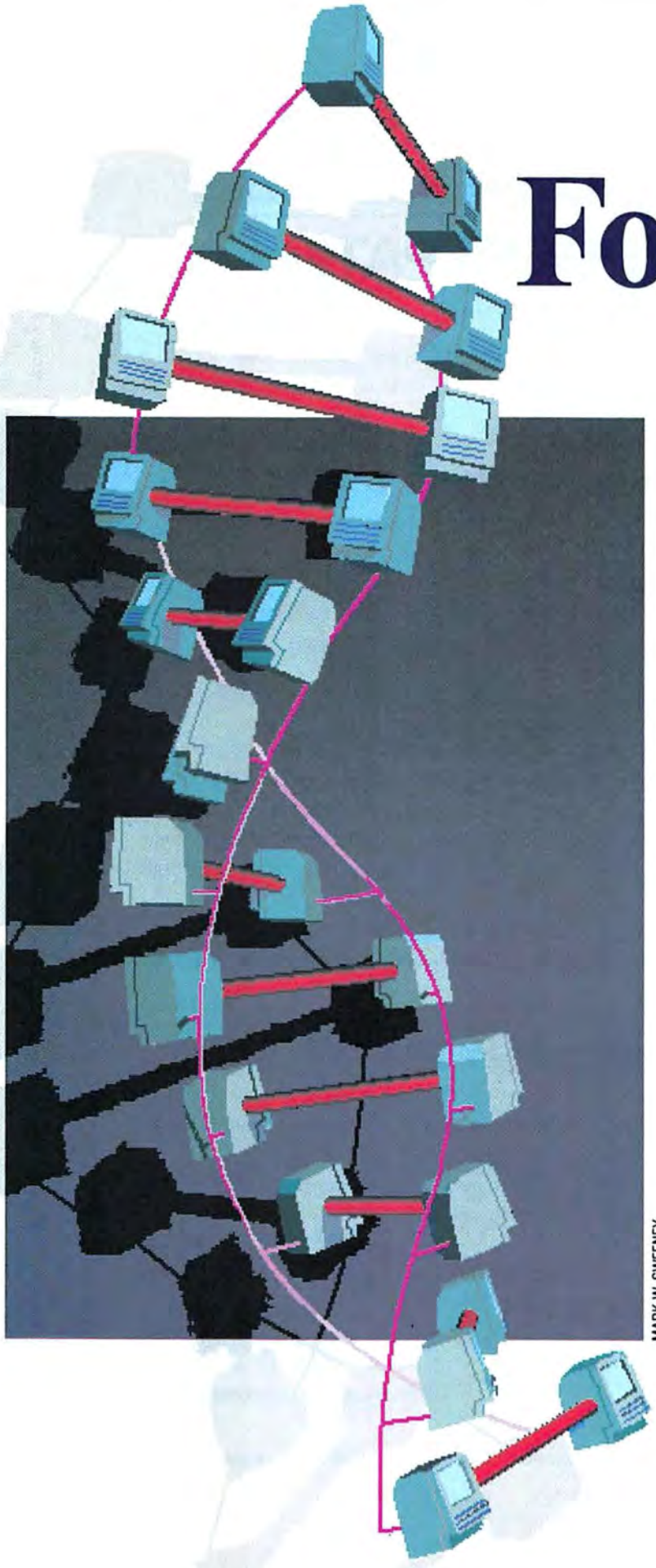
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MARK W. SWEENEY

Following

AppleTalk Filing Protocol sets some standards for file serving on an AppleTalk network.

AppleTalk is one of the most widely used network operating systems in the world. That fact may come as a surprise to those who don't follow these arcane matters. AppleTalk nodes up and running count in the millions, and it's not uncommon to find a large cluster of AppleTalk networks (called an *internetwork*) with thousands of computers, even of different types, working as an integrated whole. With the use of high-speed lines and modems, some AppleTalk internetworks span continents.

Obviously not every AppleTalk network is that grandiose. The kernel Macintosh AppleTalk network consists simply of a Mac running AppleTalk software, connected to an AppleTalk-equipped ImageWriter II or laser printer via LocalTalk twisted-pair cabling. In fact, that is most users' initial rationale for setting up AppleTalk: Several people want to share a single printer. But the network can be used to share other resources — such

BY REESE JONES

Protocol

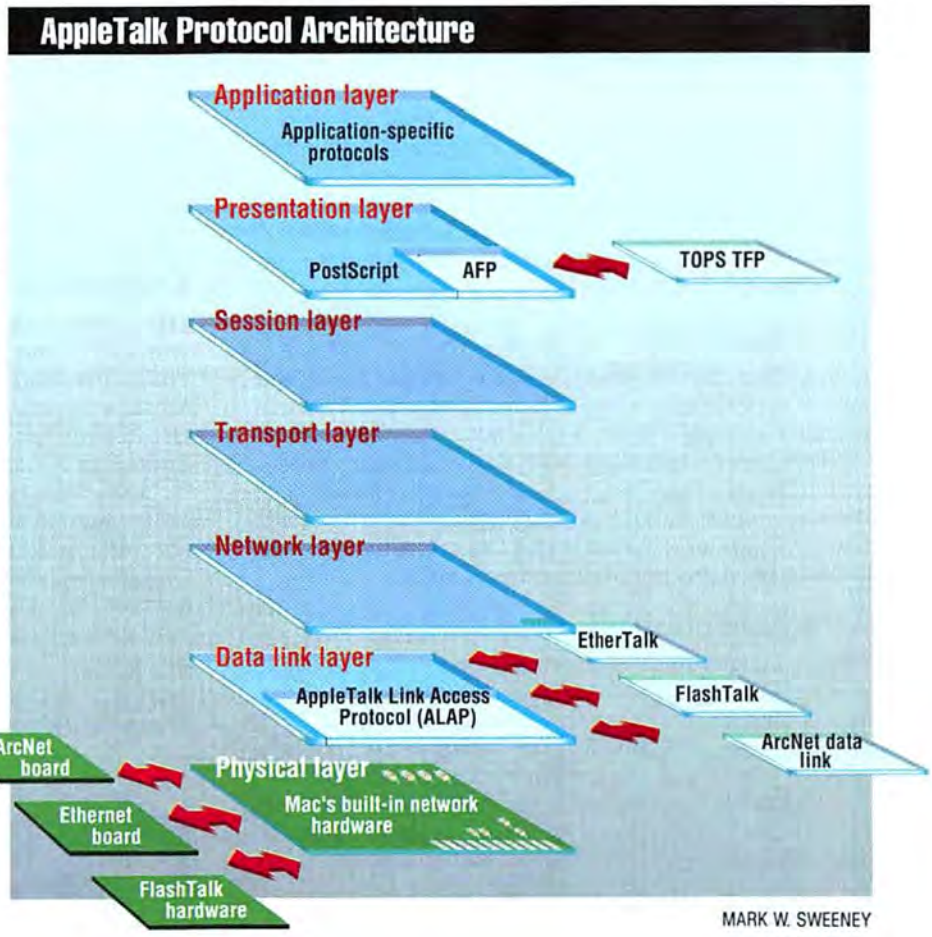
as electronic mail, databases, gateways to mainframes — and will be used for other applications yet to be invented. What's more, all of these networking applications can be used simultaneously. AppleTalk lets you perform many tasks at the same time.

APPLETALK FILING CABINETS

One key ability offered by AppleTalk is the sharing of files over a network. I'll be explaining how that's made possible through the AppleTalk Filing Protocol (AFP). But for the moment, let's make real-world analogies for other resources on a network:

- Laser printer: the office copy machine — you do it yourself.
- Central print spooler: the office copy machine, with a group clerical assistant.
- Distributed print spooler: the office copy machine, with a personal secretary.
- Central file server: the central file room or library.
- Database file server: the central file room or library plus librarian.
- Distributed file server: the file drawers in your and others' desks available everywhere.
- Server-based E-mail: telephone with phone-mail ability.
- Distributed E-mail: the place for telephone message slips on the desk.
- Timbuktu (virtual screen): the conference/meeting room or a telephone conference.
- Timbuktu file folder: the in-box on your desk for Federal Express, mail, and files.

In our analogy, a file server may be compared to a file cabinet with multiple drawers. Within each drawer you can put multiple folders, which can in turn contain multiple papers and pictures. In a hierarchical model, these relationships can be fairly strict — a kind of Chinese box. In its centralized version, the office has a file room that contains cabinets; the cabinets contain drawers; the drawers, folders; the folders, files, with additional organization within the file. The user has keys to



MARK W. SWEENEY

Figure 1: AppleTalk is based on the ISO/OSI network model. Users can replace some of the modules in the protocol stack with other products also based on the ISO/OSI model.

Get your modem off your desk... and into your desktop.



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Modems are wonderful tools for communicating with other computers over the phone lines. However, until now they added to the clutter and complexity of your desk. With the ProModem 2400SE or ProModem 2400MII, you can keep *your* modem where it belongs: on your Mac's desktop.

If you plan to take your SE on the road or simply want the convenience of an internal modem, a ProModem is your obvious choice.

For the Macintosh® SE or SE/30.

The ProModem 2400SE mounts inside your SE or SE/30 and won't use up your only expansion slot. You will still be able to install an accelerator card or other add-on card if you like. The 2400SE installs in minutes with no modifications necessary. Our unique Pass-Thru port connects other serial devices to your SE without switch boxes or swapping cables. We even include an exclusive Status Lights DA that provides visual modem status just like an external modem.

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For Mac II owners, our ProModem 2400MII plugs directly into one of your Mac II's NUBUS slots. With the included software, you can switch between serial devices with a simple keystroke. The 2400MII even allows you to add an *extra* serial port in case you have more peripherals than ports. Unlike some internal modems, the 2400MII won't lock out your Mac's modem port. Our exclusive Status Lights DA provides visual status just like an external modem.

Plus! 4800 baud and error-free!

Our ***Plus*** series are fast and accurate with 4800 baud throughput and error free transmissions. Purchase a ProModem 2400SE ***Plus***, ProModem 2400MII ***Plus*** or simply buy the ProModem and add the ***Plus*** later. All ***Plus*** modems can operate at up to 4800 baud *totally error free* using MNP™ -5. That's because MNP compresses your data and automatically checks the accuracy of all of your information coming and going. Sending and receiving data takes up to half the time required with a standard 2400 baud modem.

Compatibility. Reliability. Dependability.

Like all ProModems, the 2400SE and 2400MII are compatible with CCITT and Bell standards. You will also find the ProModem works the industry-standard AT command set. You can use whatever communications software you choose. Use Red Ryder®, Microphone II™, or Smartcom II®— The choice is yours.

Prometheus has manufactured computer products since 1981. Our only business is data communications for computers. All ProModems are designed and manufactured in the U.S. and include a 2 year warranty and free lifetime technical support. Depend on Prometheus– we'll be here to answer your questions long after the warranty expires.

ProModem 2400SE	$299
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some of these drawers, folders, and files. In its decentralized version (as in TOPS), you give some of your coworkers the keys to the file drawers in your desk. And services like E-mail or Timbuktu (virtual-screen software that allows you to see the screen and files of another Mac on the network as if they were your own) have their own real-life analogies in message and conference systems.

The bottom line is that the Macintosh Hierarchical File System (HFS) is organized in the local operating system in the same manner as a file cabinet, and that Apple developed AFP to be the network extension of HFS. The development of AFP in turn laid the groundwork for AppleShare, Apple's implementation of an AFP-compliant file server. But what is AFP and how does it relate to AppleShare and TOPS, central and distributed file servers (respectively) for AppleTalk? To answer that, we need to step back and take a look at the AppleTalk protocols and how AFP fits into the grand scheme.

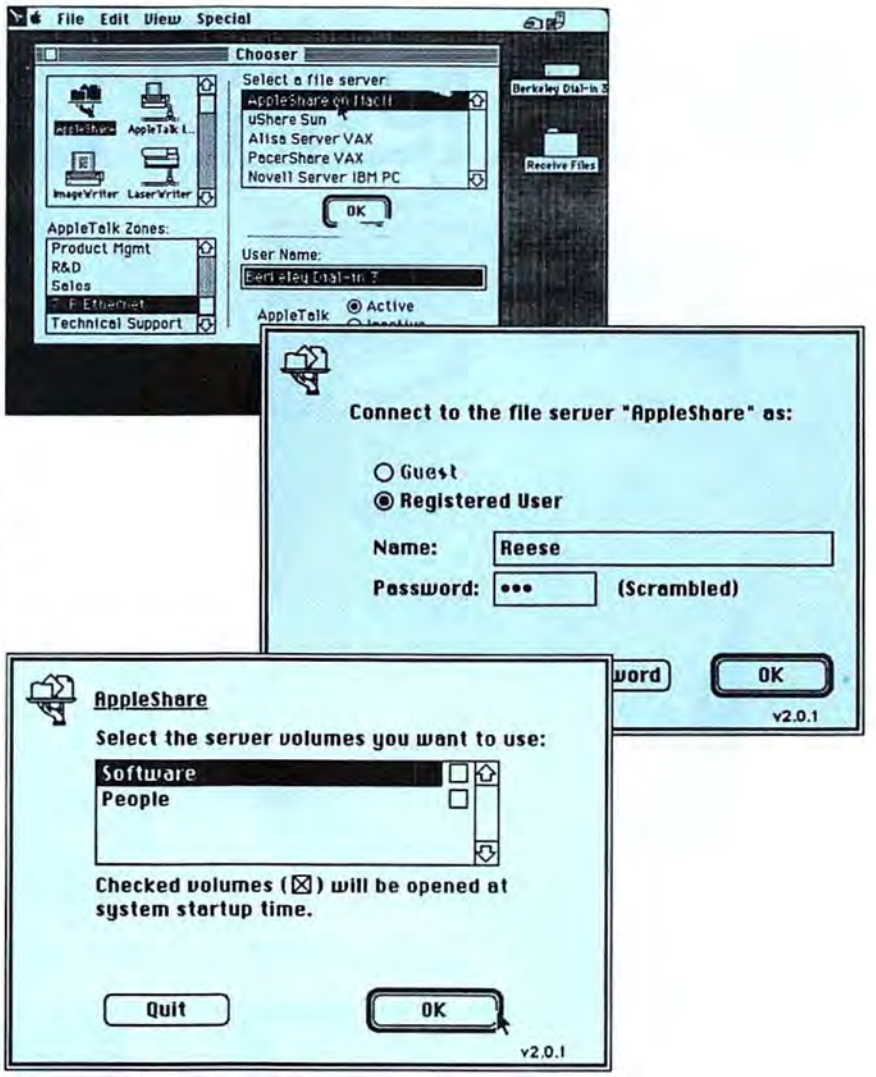


Figure 2: Through the Chooser, the user is successively presented with a network lookup for zones, file servers within those zones, a user log-on to a chosen server, and a final dialog box for mounting server volumes.

APPLETALK AND THE AFP SERVER

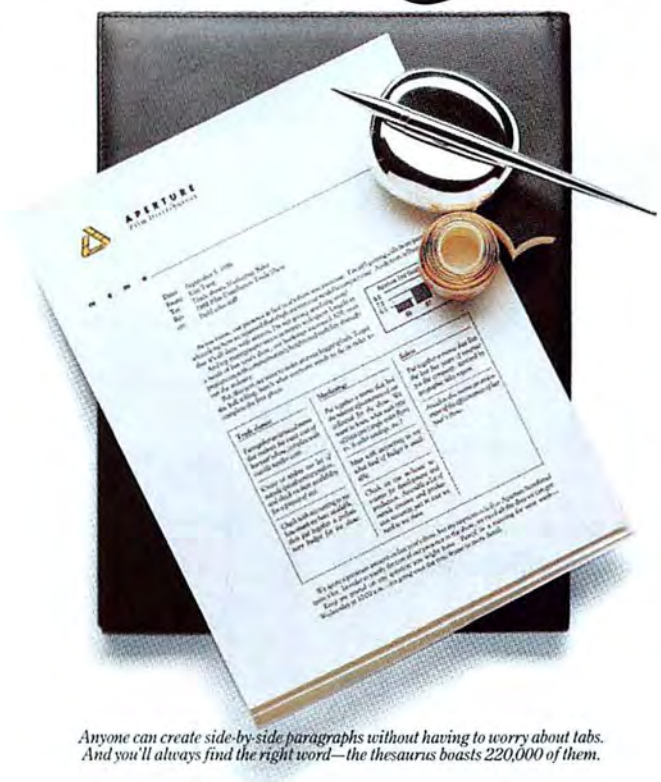
You may have heard of the International Standards Organization/Open Systems Interconnection (ISO/OSI) seven-layer protocol cake, the stack of interrelated software and hardware layers that regulate the communication between computers on many networks, including AppleTalk networks. Quite simply, this stack of protocols constitutes the network operating system that helps define AppleTalk. The protocols accomplish many things, but their layering provides some very important abilities. One is that the network operating system can be run over any transmission medium. That means, among other things, that the bottom two layers may be swapped out for different media. (See "Making a Small Net Work" in this issue.)

Furthermore, AppleTalk packets can be intermixed with other networks such as 3Com, Novell, DECnet, and transmission control protocol/Internet protocol (TCP/IP) network file system (NFS) communications, and between multiple types of computer operating systems such as MS-DOS, OS/2, Pro-DOS, UNIX, VMS, and others. In this case, because they follow the ISO/OSI model, they can reside side by side over the wires without interfering with one another. These operating systems can even work with one another at the network level with the use of gateways to convert from one protocol to another. Furthermore, with Novell's recent announcement of its Open Link interface, a given computer can use multiple network operating systems simultaneously.

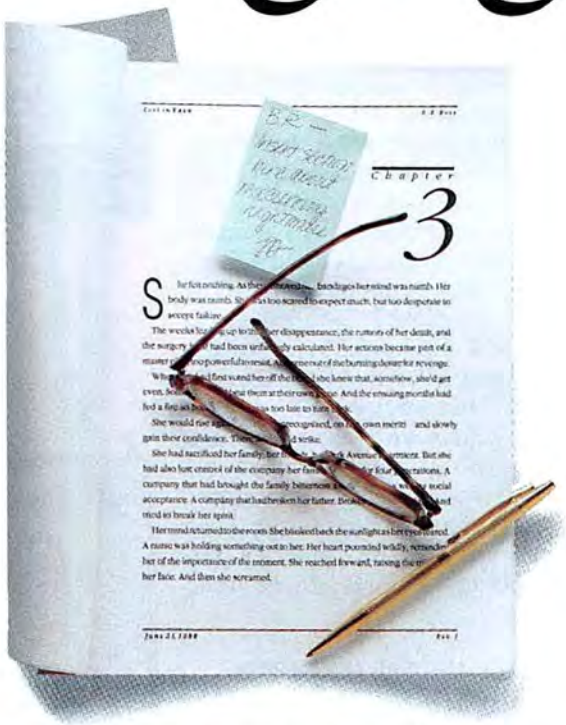
AppleTalk can also operate over a wide range of speeds. The most common is 230,400 bits per second (built-in LocalTalk frequency), but the AppleTalk protocols can be useful over a range of 1,200 bits per second (for asynchronous AppleTalk — the minimum frequency for modems accessing an AppleTalk network) all the way up to 10 million bits per second (for EtherTalk) and more. The point to remember here is not speed, but frequency: While data always moves at the same speed, regardless of cabling, it doesn't always move at the same frequency. A higher frequency means that data packets occur more often. Different segments can be connected over AppleTalk to a common internetwork.

AFP resides at the upper end of the

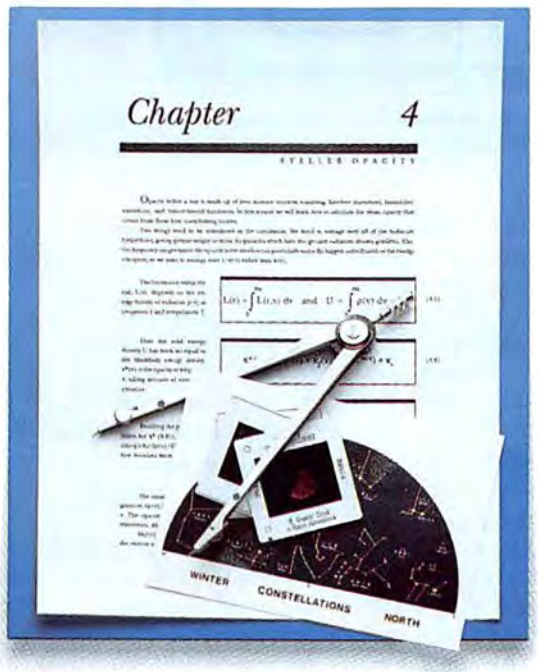
For heavy users of the English language.



Anyone can create side-by-side paragraphs without having to worry about tabs. And you'll always find the right word—the thesaurus boasts 220,000 of them.



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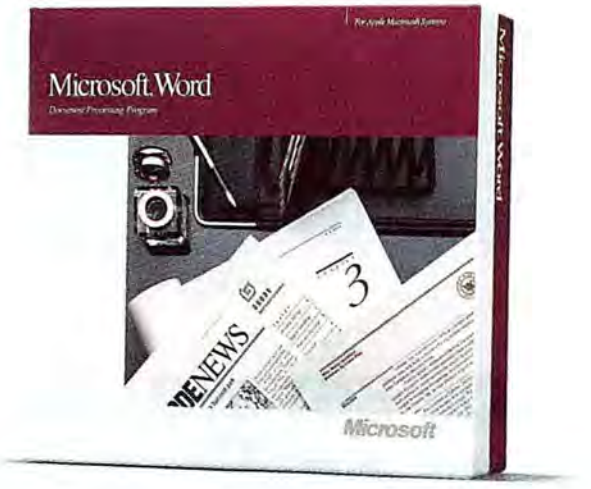


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A new Word.



The expression that you can't please all of the people all of the time just got redefined.

In developing Microsoft® Word version 4.0, we took input from the over 400,000 Word users who made Word the best-selling Macintosh® product in history. Added startling, cutting-edge technology. And the result is a gracious, easy-to-use word processing program with features as dynamic and diverse as its users.

Unleash those features, and you push the envelope of word processing. You can set up tables automatically, without worrying about tabs. Reformat an entire document with one command. And choose from four editing views—including one that shows you exactly what your document looks like, so you can organize and revise your documents without any guesswork.

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SILICON BEACH SOFTWARE

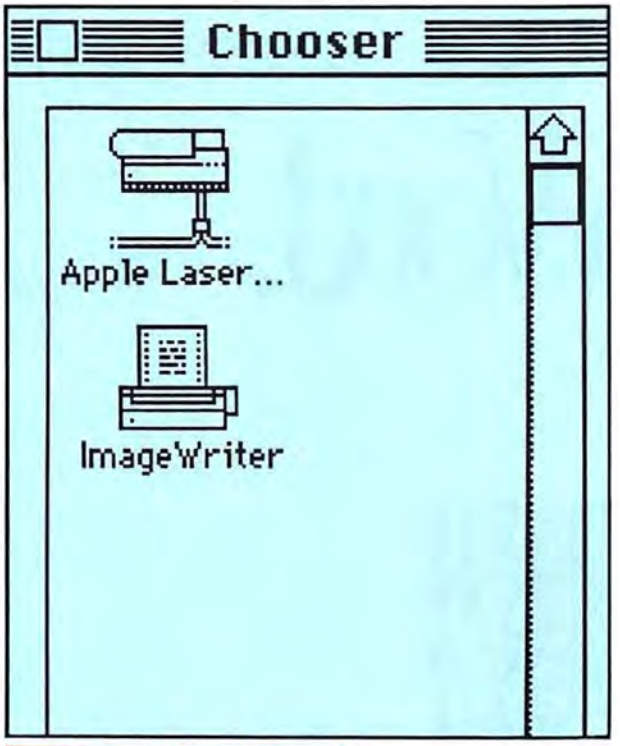
And keep in mind Microsoft Word is part of an entire line of Microsoft products that work seamlessly together, so you can do more with your Macintosh.

Microsoft Word 4.0 can emphasize, articulate, clarify and organize your words. In fact, practically the only thing it can't do is think for you. Yet.

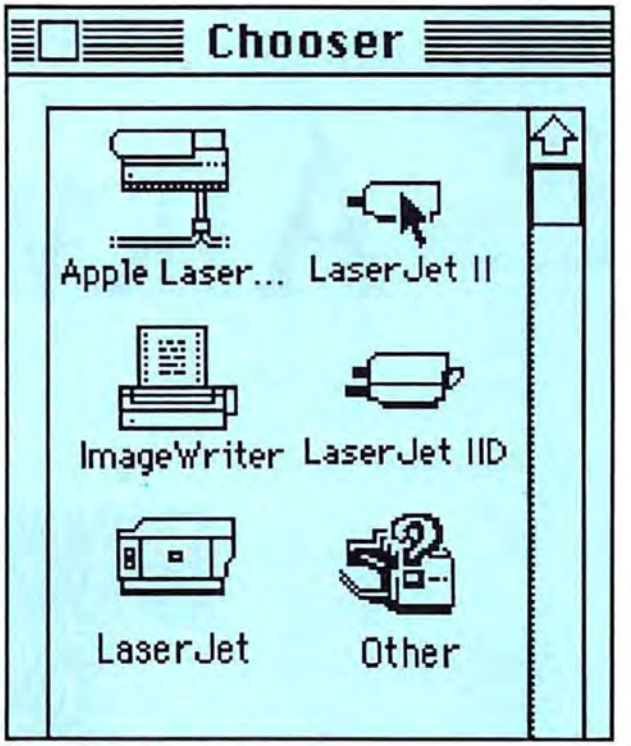
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Before MacPrint.



After MacPrint.

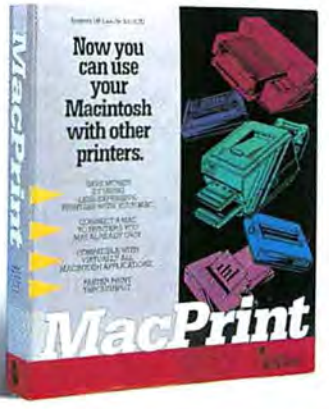
MacPrint has several advantages you can easily point to.

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protocol stack — just below the application layer in the presentation layer — along with PostScript, Adobe's page-description language. In the case of PostScript, the page description is presented in this layer to the laser printer, which then prints out the page. In the case of AFP, the description of files out on the network is presented in a form that the user's file system and applications can understand.

The AFP protocols that reside in the presentation layer allow users to share data files and applications that reside on a shared resource, such as an AFP file server (see Figure 1). Here's where AppleShare comes in. AppleShare is Apple's version of an AFP-compliant centralized network file server. Centralized AFP-compliant servers are also available from several other third-party developers, including Novell, Alisa, Pacer, IPT, DayStar, and others. These AFP-compliant servers run on various platforms including Macintosh, MS-DOS, UNIX, and VAX, as well as custom ones. When AFP-compliant server software is used, it doesn't matter what platform the server is on: It appears to the user as just another AppleShare server mounted on the Macintosh screen.

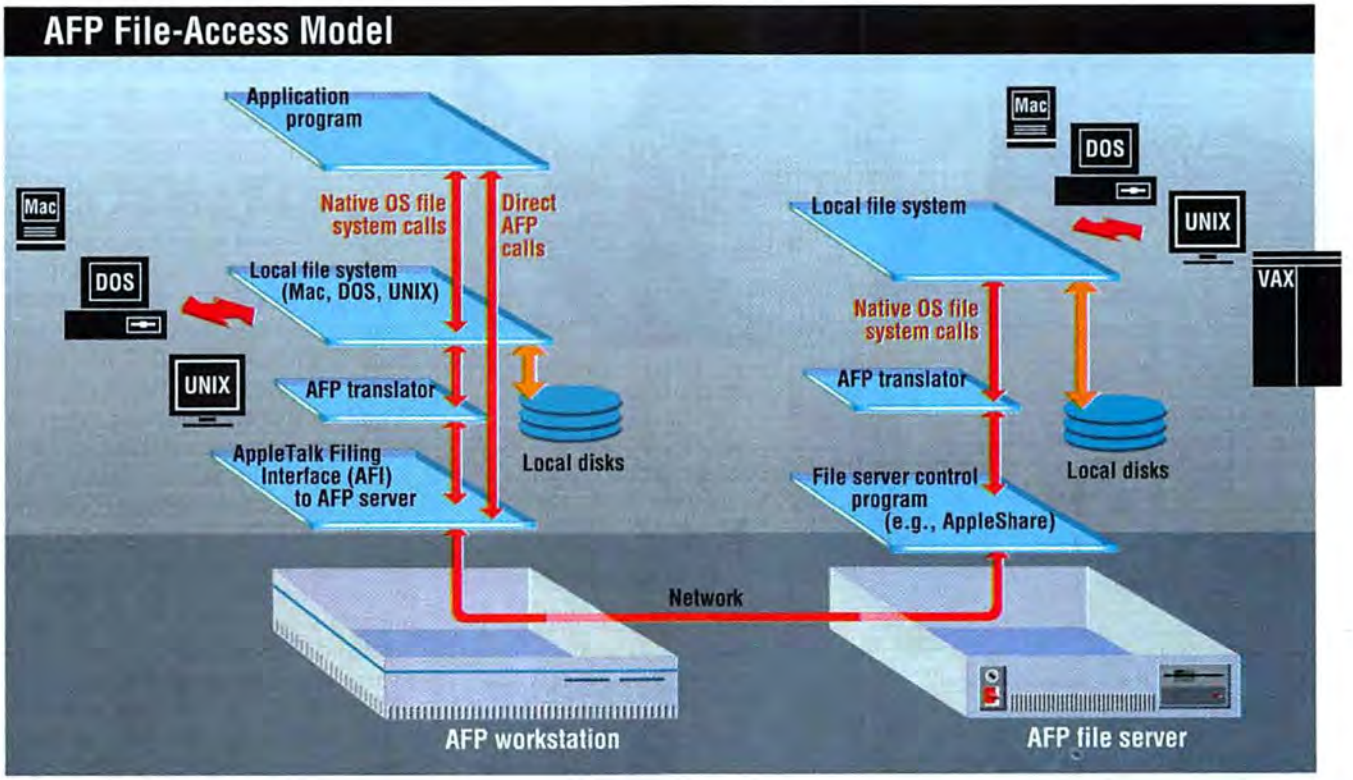
I use the phrase *AFP-compliant* here and not *AFP-compatible* for good reason. Any hardware or software that works over AppleTalk can be said to be AFP-compatible, but only AFP servers that can be accessed by the AppleShare client software or by applications that make direct AFP calls to the operating system are truly AFP-compliant. Companies can claim products that do not have all the features of Apple's AppleShare to be AFP-compliant (though they may be less expensive). On the other hand, other products claimed to be AFP-compliant have more features than AppleShare. At this time, TOPS is not all AFP-compliant.

THE AFP CLIENT

The AFP client software — included with the System software and the AppleTalk driver — was developed as an integral part of, and extension to, HFS and the Mac operating system. The single test that divides the compatible from the compliant is this: If the server cannot be mounted by using the AppleShare client *rdev* (a device related to cdevs and INITs) using the Chooser DA in the Macintosh System software (6.0 or later), then the server is not AFP-compliant.

Selecting the AppleShare icon within the Chooser list activates a network lookup for all AFP servers in the selected AppleTalk zone. The list of available AFP servers in the zone is presented to the user (see Figure 2).

Double-clicking on a file server's



MARK W. SWEENEY

Figure 3: AFP client workstations and AFP servers can be on many platforms. AFP translates calls to and from the various operating systems so that standardized packets go out over AppleTalk.

name activates the AFP log-on dialog box. You type in your name and password, and the information is passed back to the AFP server.

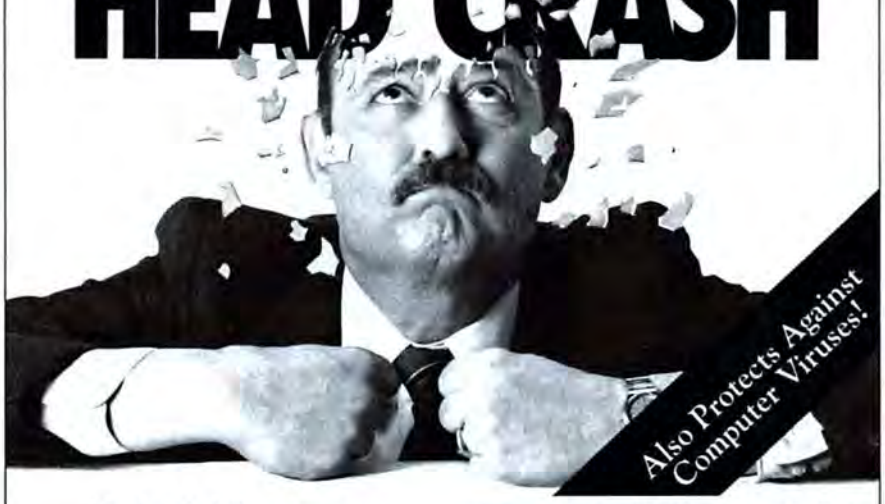
You are then presented with the list of the server volumes you are authorized to mount on your machine.

After you have selected the volumes to be mounted, AFP handles the translation of local file calls in your machine into network packets (see Figure 3). These go out over the network to the File Server Control Program (FSCP) on the file server machine. The file server may be a Macintosh or another computer configured as an AFP server. Regardless, the FSCP translates the AFP file calls from the network into a form that the server machine's native operating system can understand. If the server is a VAX, the calls are translated into VMS. If it is an IBM PC, the calls are translated into DOS. All information coming from the server is converted back to AFP before it goes out over the network.

Clients can also be using alternate operating systems. On the Mac side, AFP translation is built into the Mac's operating system so that an AFP server can be accessed without the need for additional software. But other computers and operating systems can be adapted to access an AFP server: AFP client software can do the same conversion of AFP data into the client machine's native operating system. The PC client sees the AFP server as just another MS-DOS drive, while the UNIX user will see it as just another UNIX disk volume.

In the AppleTalk networking world, the trend is toward all machines speaking to the network with AFP, independent of their native file system. In the UNIX networking world, the equivalent of AFP is Sun's NFS protocol. With NFS, most machines act as both clients and servers, similar to TOPS in the AppleTalk world. It's one of the main differences between AFP and NFS: With AFP (up until now), machines are usually servers or clients. While they can act as both, no products have implemented this capability with AFP on the Macintosh platform. TOPS uses its proprietary TOPS Filing Protocol (TFP) network file system rather than AFP, and the company has announced that TOPS will migrate toward NFS. In both cases, AFP and NFS have similar intentions: to provide a standardized way of managing file access between machines over a network. While Apple and Sun duke it out over protocols, with the use of a GatorBox from Cayman Systems, you can convert AFP to NFS, and LocalTalk to TCP/IP Ethernet. AFP clients on the AppleTalk side can "see" an NFS server as an AFP server, gaining transparency between machine

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types, alternate file systems, and network operating systems.

AFP-COMPLIANT OR AFP-COMPATIBLE?

There are many other types of servers beyond AFP-compliant servers. These network applications are different from AFP servers, but since AFP is part of the AppleTalk protocol stack (and even part of the Mac operating system), any software that is compatible with AppleTalk should also be AFP-compatible. To be AFP-compliant, a server must give a user access to all the features of AFP. Network disk servers such as MacServe from InfoSphere are not AFP-compliant. Nor is the 3Com 3Server (though it has some features not yet found in AFP-compliant servers, such as built-in electronic mail and the ability to exist simultaneously on LocalTalk and Ethernet). The 3Com server will support AFP by the end of 1989.

Through the TOPS file server software, you can publish your own machine's disk volumes, accessible to other TOPS owners. Since TOPS uses its proprietary TFP, you cannot access a TOPS server volume using AFP. Like AFP, TOPS supports many different machine types and operating systems, allowing them to exchange files transparently. In fact, TOPS is attempting to accomplish a similar task as AFP and NFS, namely, to standardize the file format calls carried on the network and to have each machine translate from its own native file system to the common protocol format, then back again. Thus, all machines that can translate into the common language can speak with each other transparently. Sun has announced that TOPS will be transparently connected through gateways and multilingual modes.

Non-compliance with AFP can have its consequences, however. Currently, some applications, such as CE Software's QuickMail and ACIUS' 4th Dimension, make use of direct AFP calls, and in a non-compliant environment this can cause problems. Fox Software has avoided TOPS compatibility for its FoxBASE+/Mac database management system because of TOPS' non-compliance with AFP.

These compliance problems emphasize a need for standardizing the way applications talk to each other and to servers on the network. This standard would extend further into a standardized application program interface (API), which would allow a new class of network applications. API will probably be built upon AFP, the basis for the future evolution of AppleTalk.

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The Art of Persuasion and MORE II



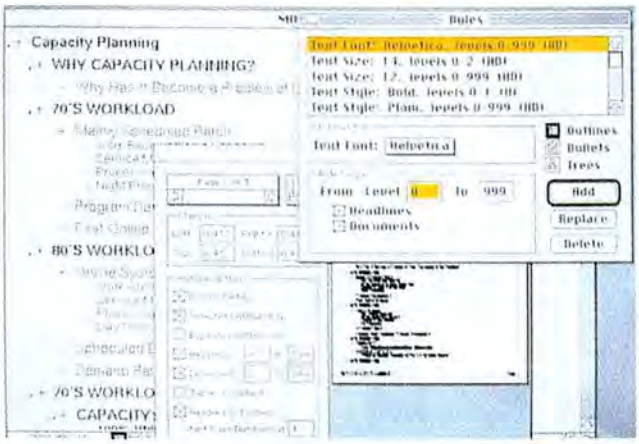
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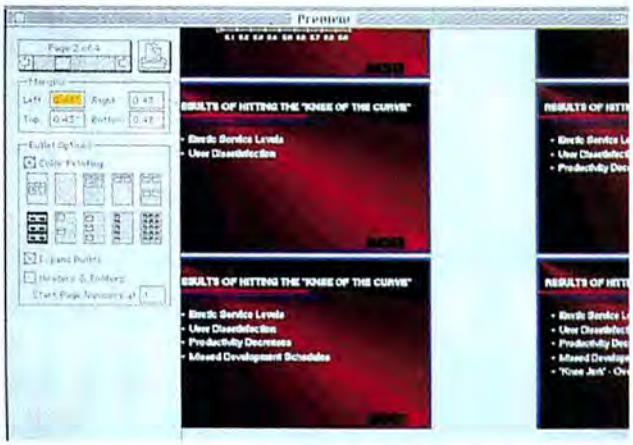
Two years ago, *desktop presentation* was a two-horse town. First came PowerPoint, and then we had MORE. Albeit the first of their kind, these programs were limited in their capabilities, including color output. Then again, the high-end Mac was the Plus with its monochrome display. The advent of the Mac II and more affordable color-output devices made presentation packages de rigueur among Mac applications. Want proof?

In the past year, five presentation packages have been introduced, each supporting the color of the Mac II and each offering color-output options: PowerPoint 2.0, Cricket Presents, StandOut!, MORE II, and Persua-

BY ROBERT R. WIGGINS



The Rules feature in MORE II enables you to set global or local rules for every formatting option available. The Print Preview capability gives you total control of your output.



When you print bullet charts in MORE II, the Print Preview dialog box lets you choose from many variations of handout and note page formats.

sion. *MacUser* covered the first three programs in "The Presentation Pitch" (December '88). Saving the best for last, this time around we will look at MORE II and Persuasion.

Both MORE II and Persuasion have been in development for more than two years, and the amount of work that went into them is very apparent. These are two outstanding programs that, when added to the three good programs already out, make the desktop-presentation category top-heavy with feature-laden, powerful programs. Putting a presentation together on the Macintosh has come a long, long way from MacWrite and MacDraw.

WE WANTED MORE, II

In the very early days of the 128K, Macintosh Living Videotext introduced ThinkTank, which begat ThinkTank 512, the original outliner and organizer for the Macintosh. In 1986 came the second generation, which was everything ThinkTank was and much more — in fact, it was MORE. MORE added multiple windows, font and style control, math capabilities, and even some color. The first program to generate instant bullet charts, MORE was a landmark. MORE was the beginning of desktop presentation.

When we really wanted more than MORE had to offer, Symantec gave us MORE II. The outline processor at the heart of MORE II is much more powerful and sophisticated than the first iteration. Now, headlines wrap onto multiple lines, though the document window of MORE is still available for long pieces of text. Graphics can now appear anywhere in a headline or in a document window, and you can wrap text around the graphics. Formatting capabilities have been improved, with formatting control available for each section of the outline — not just globally.

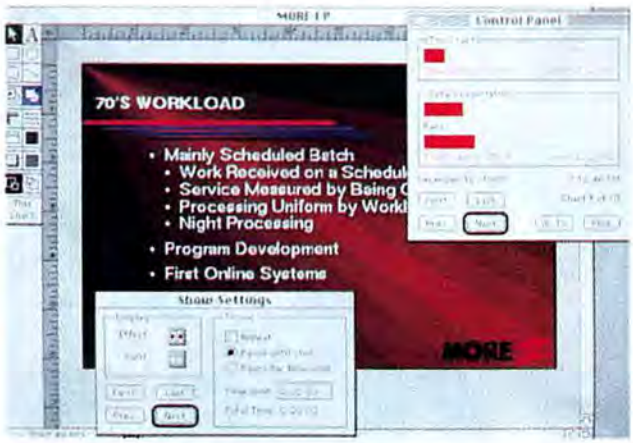
> Putting a presentation together on the Macintosh has come a long, long way from MacWrite and MacDraw.

The biggest change to the outline processor is that it is finally truly WYSIWYG, and the formatting — such as labeling, line spacing, indentation, fonts, sizes, styles, and colors — is shown on-screen instead of only when you actually print. When you do print, there's a flexible Print Preview/Options window that shows what the printed page will look like and lets you set various options for the printout. And in these days of MultiFinder and memory shortages, you'll be happy to hear that MORE II uses *virtual memory,* which allows your outlines to be as big as you want (up to the size of your hard disk). No longer is the size of your outline limited by available RAM.

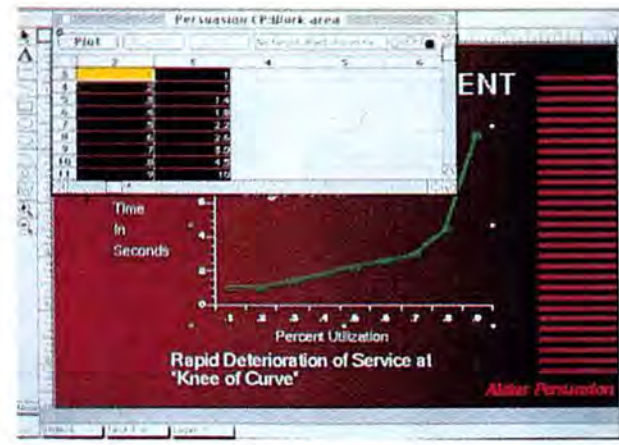
MORE OF THE SAME

In addition to new capabilities, the outliner retains all the features of MORE, so you can hoist a topic, mark and gather topics, clone topics, perform calculations, sort, and dial phone numbers. There's even a calendar feature that can create outlines. MORE II offers a spelling checker and Find/Replace commands, too, though they only operate in Outline view. A major enhancement in MORE II is the introduction of *rules.* Similar to style sheets, rules enable you to define each aspect of formatting (font, size, labeling, justification, tabs, etc.) as a rule. Rules can be global, for the entire outline, or can be attached to any sublevel. They are also hierarchical, so if a given sublevel has no rule defined for a particular formatting item, it defaults to the rule of its parent level.

The backbone of MORE is the outliner. You use the outliner to organize your thoughts and ideas and perform the kinds of functions already listed. But once you have your thoughts outlined, you can simply select the Bullet Chart option to have MORE II create a bullet chart automatically — just as MORE did, but with a twist. MORE II creates these charts as PICT-type



MORE II's best feature is its powerful Slide Show capability. The Show Settings dialog box enables you to specify special effects, build types, and time limits for each slide.



Persuasion enables you to define data points for charts in an internal spreadsheet, or you can import data from WKS files. A chart can be ungrouped and each element of the chart can be rearranged separately.

objects and takes you into a drawing environment so you can make any changes you want. This drawing environment is similar to that of programs like MacDraw, with drawing tools (see Table 1), layers, a grid (if you desire), and alignment and grouping commands. MORE II supports full color, too, so you can make some very attractive presentations on a Macintosh II. Bullet Chart view offers a Master Page capability as well, for making slide backgrounds.

The Rules capability is also available in the Bullet Chart view. MORE II keeps track of rules for bullet charts separately from those of outlines and tree charts. Headings that in Outline view are 12-point plain text by rule can, in Bullet Chart view, be 36-point bold and italic by rule.

The final view MORE II offers is the Tree Chart view, which is ideal for organization charts. Tree Chart view offers a drawing environment that is similar to that of Bullet Chart view, although less complete. Tree charts can be copied as objects and pasted into Bullet Chart view if you need the additional drawing tools or if you want to include an organization chart on a slide.

MORE OUTPUT, SLIDE CONTROL

Once you've created your bullet chart presentation, you need to present it. Like the other presentation packages, MORE II offers many output options and will print handouts and note pages in addition to slides. What sets MORE II apart is its Slide Show capability. While most presentation software offers one effect and one time limit per slide show, MORE II lets you specify a separate effect and time limit for each slide. MORE II also supports three types of *builds,* where each subheading on a slide is highlighted one at a time during the slide show. MORE II will also simulate this on output by creating multiple slides from a single slide with the build items.

If you run the slide show on a Macintosh II with multiple monitors, MORE II makes the monitor with the menu bar the "speaker's monitor" and the other monitors "audience monitors." The speaker's monitor shows the slides with their notes attached and can display a Control Panel that can be used to run the slide show — it even lets you show slides out of order.

The Control Panel watches the times you have allotted for each slide and for the overall show, switching to red if you fall behind. There are many key equivalents that can also be used for navigating through the slides, and MORE II even supports a Kodak remote-control unit (there's a discount coupon in the box) so you can run the show from across the room with total control.

CREATING ARTISTIC ABILITY

The main problem facing many people who need to create a presentation is lack of artistic ability. MORE II comes with many example and sample presentations (both black-and-white and color) that can be used as templates for a new presentation. But the real power of MORE II for the less artistic comes from its Library feature. MORE II comes with many libraries of graphics, including clip art and many backgrounds. You can also create libraries of your own, and MORE II comes with a Mover utility for moving objects between libraries. Libraries can contain outlines, objects, rules, or graphics (bit-mapped or Encapsulated PostScript Format).

LESS TROUBLE, MORE FILLING

MORE was an excellent organizational tool. MORE II is an even better organizational tool but with full desktop-presentation capability as well. With its libraries, rules, and outstanding Slide Show mode, MORE II makes an excellent presentation vehicle. However, there are some minor annoyances in MORE II, such as the inability to specify which monitors do what in Slide Show mode. There is also a minor bug that affects shaded color backgrounds when you are using multiple monitors of different types. Nevertheless, these complaints are relatively minor. [*Symantec is planning an update to address these complaints and any bugs that its customers may report. — Ed.*]

ALMOST PERSUADED

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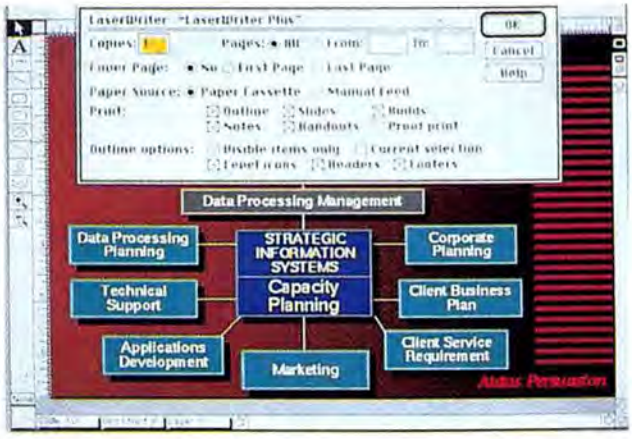
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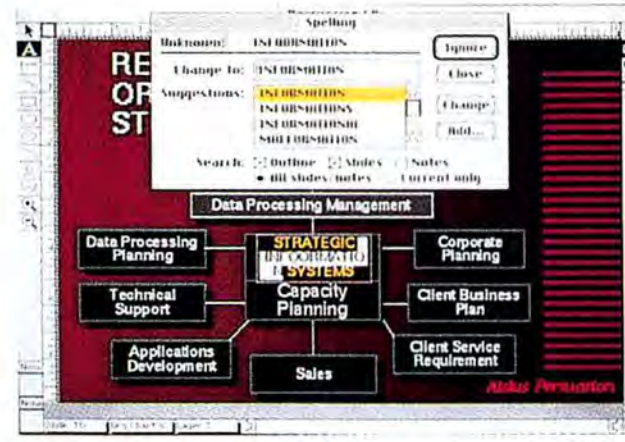


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Persuasion extends the normal Print dialog box and allows you to print outlines, notes, and handouts in addition to slides. You can also print slides with a separate slide for each build.



Persuasion includes a spelling checker and a full Find/Replace mechanism, both of which work on text appearing only on slides as well as on text in Outline view or Notes view.

top-presentation capabilities from an outliner, Persuasion approached desktop presentation from a completely opposite direction, starting out as a drawing program. Its heritage is obvious when you are in the drawing environment and find some of the commands you've always wished a drawing program had.

Persuasion comes with many *autotemplates,* each in color and black-and-white. When you install Persuasion, you specify one of these as your default, and it gets saved in your System folder as "Persuasion Prefs." When you choose New from the File menu, this template is opened as Untitled. So whether you open an autotemplate or choose New, you get presentation format laid out for you. The color autotemplates also come with predefined color schemes, making Persuasion a good program for the less artistically inclined.

While Persuasion is not a full-featured outliner like MORE II, it does have a workable Outline view that makes laying out presentations just as simple. Text-formatting commands in Persuasion's Outline view affect the entire outline, and there are special commands to designate levels of the outline as "Holder of slides," "Slide titles," and "Slide text." Once you've laid out your presentation in the outliner, you've created a presentation with the characteristics of either the autotemplate you opened or the default autotemplate.

SLIDING PERSUASION

If you switch to Slide view, you have access to Persuasion's excellent drawing environment and can polish your slides. Like MORE II and other presentation packages, Persuasion has a master layer at the back that consists of the master slide. Only Persuasion allows each presentation to have multiple master slides, which can be selected for use on each individual slide.

While Persuasion is not a full-featured outliner like MORE II, it does have a workable Outline view that makes laying out presentations just as simple.

Persuasion has the standard drawing tools and grouping and alignment commands (see Table 1), as well as some delightful extras. Some of these extras include such commands as Send Forward and Send Backward — which can be used to position objects without having to resort to the dreaded "Send-to-Back Shuffle" — and the fabulous Regroup command. The Regroup command is used to regroup objects you've ungrouped — you don't have to remember which were grouped with which. You can tell that the author has been frustrated by other drawing programs and has come up with some better ideas.

There are also several shaded fill patterns that make attractive backgrounds. A major difference between Persuasion and many other drawing environments is the addition of true layering to the pseudolayering of the Send to Back command. You can create true independent layers, which Persuasion uses for its build capability.

Persuasion also includes a powerful charting capability and offers ten kinds of charts. A user enters data for the chart either in Persuasion or imported from WKS files. Once a chart has been plotted, it can be ungrouped and the individual objects treated like any drawn object. You can even resize a chart and then choose Replot to have it perfectly drawn at the new size. One of the chart types is a simple table, which is useful for presenting tabular data.

Persuasion offers flexible output and can print note pages and handouts as well as slides. Using the layering mentioned previously, Persuasion also prints slides with builds, creating a

Table 1: Summary of Features

FEATURE	MORE II	Persuasion	PowerPoint	Cricket Presents	StandOut!
Drawing Tools					
Ovals	yes	yes	yes	yes	yes
Rectangles	yes	yes	yes	yes	yes
Rounded rectangles	yes	yes	yes	yes	yes
Lines	yes	yes	yes	yes	yes
Arcs	no	yes	no	yes	no
Triangles	no	no	no	no	yes
Polygons	no	yes	no	yes	no
Freehand	no	yes	no	yes	no
Border	yes	no	no	yes	no
Diamonds	no	no	no	yes	yes
Rhomboids	no	no	no	yes	yes
Full color	yes	yes	yes	yes	yes
Color schemes	no	yes	yes	no	no
Colorizing	no	no	yes	yes	no
Alignment	yes	yes	no	yes	yes
Centering	no	yes	no	yes	no
Grouping	yes	yes	no	yes	yes
Layering	yes	yes	yes	yes	yes
Templates	many, libraries	many, autotemplates	many	some	few
Clip art	many, libraries	many	no	no	no
Charting Tools					
Types of graphs	none	10	none	8	5
Depth (3-D)	N/A	yes	N/A	yes	shadows
Picture bar charts	N/A	no	N/A	no	yes
Exploding pies	N/A	yes	N/A	no	yes
Text Tools					
Free-form text	yes	yes	yes	no	no
Structured text	yes	yes	yes	yes	yes
Tables	no	yes	no	yes	no
Decimal tabs	no	yes	yes	yes	yes
Centered tabs	yes	no	no	yes	yes
Justified tabs	no	no	no	no	yes
Right-aligned tabs	yes	no	no	yes	yes
Tab leaders	no	no	no	no	yes
Leading	yes	yes	yes	yes	yes
Find/replace	yes	yes	yes	no	yes
Spelling checker	yes	yes	yes	no	yes
Glossaries	no	no	no	no	yes
Color text	yes	yes	yes	yes	yes
Style sheets	rules	yes	yes	no	yes
Slide Tools					
Title sorter	Outline view	Outline view	yes	yes	yes
Visual sorter	no	yes	yes	yes	yes
Slide show	yes	yes	yes	yes	yes
Special effects	yes	no	no	yes	yes
Builds	text only	text, graphics	no	no	no
Master slide	yes	multiple	yes	yes	yes
Date stamping	yes	no	yes	yes	glossary
Time stamping	yes	no	yes	yes	glossary
Output					
Handouts (slides per page)	1, 6, 15	1, 2, 3, 4, 6	2, 3, 6	2, 3, 4, 6	2, 4, 8
with notes	1, 2, 3, 4, 5				
Note pages	yes	yes	yes	yes	yes
Affiliated slide preparer	MAGICorp	Genigraphics, Autographix	Genigraphics	Autographix	MAGICorp
Import/Export					
Text import	MORE, MORE II, plain text, MacWrite, Word, ThinkTank, Ready PC, ThinkTank PC	Acta, MORE, plain text, WKS, MacWrite	MORE, ThinkTank	none	ASCII, WriteNow, MacWrite, Word
Text export	MORE, MORE II, plain text, MacWrite, Word, ThinkTank, Ready PC, ThinkTank PC	Acta, MORE, plain text	none	none	none
Graphics import	PICT, PICT2, MacDraw, Illustrator (EPSF), MacPaint	PICT, PICT2, EPSF	PICT, PICT2, EPSF, MacPaint	PICT, PICT2, EPSF, MacPaint	PICT, PICT2, EPSF, TIFF, RIFF
Graphics export	PICT, PICT2, MacDraw, Illustrator (EPSF), MacPaint	PICT, Scrapbook	Scrapbook	none	PICT

separate slide for layer 1; layers 1 and 2; layers 1, 2, and 3; and so on. Since layers can include both graphics and text, you get total flexibility of slide output. Persuasion also has a Slide Show mode, and, while it offers no special effects (other than those possible using builds), it is the only presentation program that allows you to blow up slides to fill the screen (useful for 19-inch and larger monitors).

Persuasion has many other features. It includes a spelling checker and Find/Replace mechanism that works not only on text in the outline but also on any text items anywhere on any chart. Persuasion has simple style sheets called *text formats* that make formatting easy. Put all these features together and you have an outstanding presentation tool.



HARD CHOICES

Both MORE II and Persuasion are excellent presentation tools, so choosing between them is difficult. Ideally, you should get them both and use each program in the situations it handles best. Since they both offer many import and export capabilities, a user can even move presentations and parts of presentations back and forth between the two very easily. If you're on a budget, though, that may not be possible, so you'll have to look at their relative strengths and choose based on how you will be using them and which features are more important to you.

Because of its strong outliner and its powerful Rules feature, MORE II is the better choice when you will be working primarily with text. MORE II's text builds are another point in its favor. If most of your presentations have to be done quickly, MORE II may be the better program for you. If you intend to do most of your presenting real-time on the Macintosh, especially if you'll be using multiple monitors, then MORE II is definitely the program you want, since it gives you absolute control over every nuance of an on-screen presentation and even offers the remote-control option.

With its very powerful drawing environment and graphic build capability, Persuasion is the better choice for presentations with more graphics. The excellent charting capabilities are another plus, obviating the need for a separate graphing program. Persuasion's autotemplates, multiple master slides, and color schemes make it the better choice if you don't have a strong artistic side. These features let almost anyone produce attractive and effective presentations quickly and easily.

One other issue to consider is how easily you can learn to use new software. While MORE II lets you create slides instantly, its more advanced features are harder to master, and some of

its features are not intuitive unless you've used previous versions of MORE. Persuasion is easier to learn, and most operations work exactly as you'd expect. Once you spend the time to learn MORE II, though, you'll find it flexible and powerful. Both companies are already working on the next version, so expect the feature gap to narrow from both sides.

ROBERT R. WIGGINS IS MACUSER'S CONTRIBUTING BUSINESS EDITOR AND HAS MADE COUNTLESS SLIDE AND OVERHEAD PRESENTATIONS OVER THE YEARS.

MACUSER RATING

MORE II ★★★★★

Follows Mac Interface	■ ■ ■ ■ ■
Printed Documentation	■ ■ ■ ■ ■
On-Screen Help	■ ■ ■ ■ ■
Performance	■ ■ ■ ■ ■
Support	■ ■ ■ ■ ■
Consumer Value	■ ■ ■ ■ ■

Comments: Much improved outlining and organizational tool coupled with excellent presentation technology. **Best Feature:** On-screen presentation capabilities miles ahead of the competition, especially in a multiple-monitor setup. **Worst Feature:** Not always intuitive; higher learning curve to get most out of power-user features. **List Price:** $395. Published by Symantec Corporation, Living Videotext Division, 10201 Torre Ave., Cupertino, CA 95014; (408) 253-9600. Requires Mac Plus or later model, 1 megabyte RAM, hard disk, and System 4.1 or later. Not copy-protected.

MACUSER RATING

Persuasion ★★★★★

Follows Mac Interface	■ ■ ■ ■ ■
Printed Documentation	■ ■ ■ ■ ■
On-Screen Help	■ ■ ■ ■ ■
Performance	■ ■ ■ ■ ■
Support	■ ■ ■ ■ ■
Consumer Value	■ ■ ■ ■ ■

Comments: Outstanding presentation tool with an excellent drawing environment. **Best Feature:** Extensive autotemplates and color schemes coupled with outlining tool and multiple master slides make it easy to turn out a beautiful presentation quickly. **Worst Feature:** Slide Show capability is limited. **List Price:** $495. Published by Aldus Corporation, 411 First Ave. S., Seattle, WA 98104; (206) 622-5500. Requires Mac Plus or later model, 1 megabyte RAM, hard disk, and System 4.1 or later. Not copy-protected.

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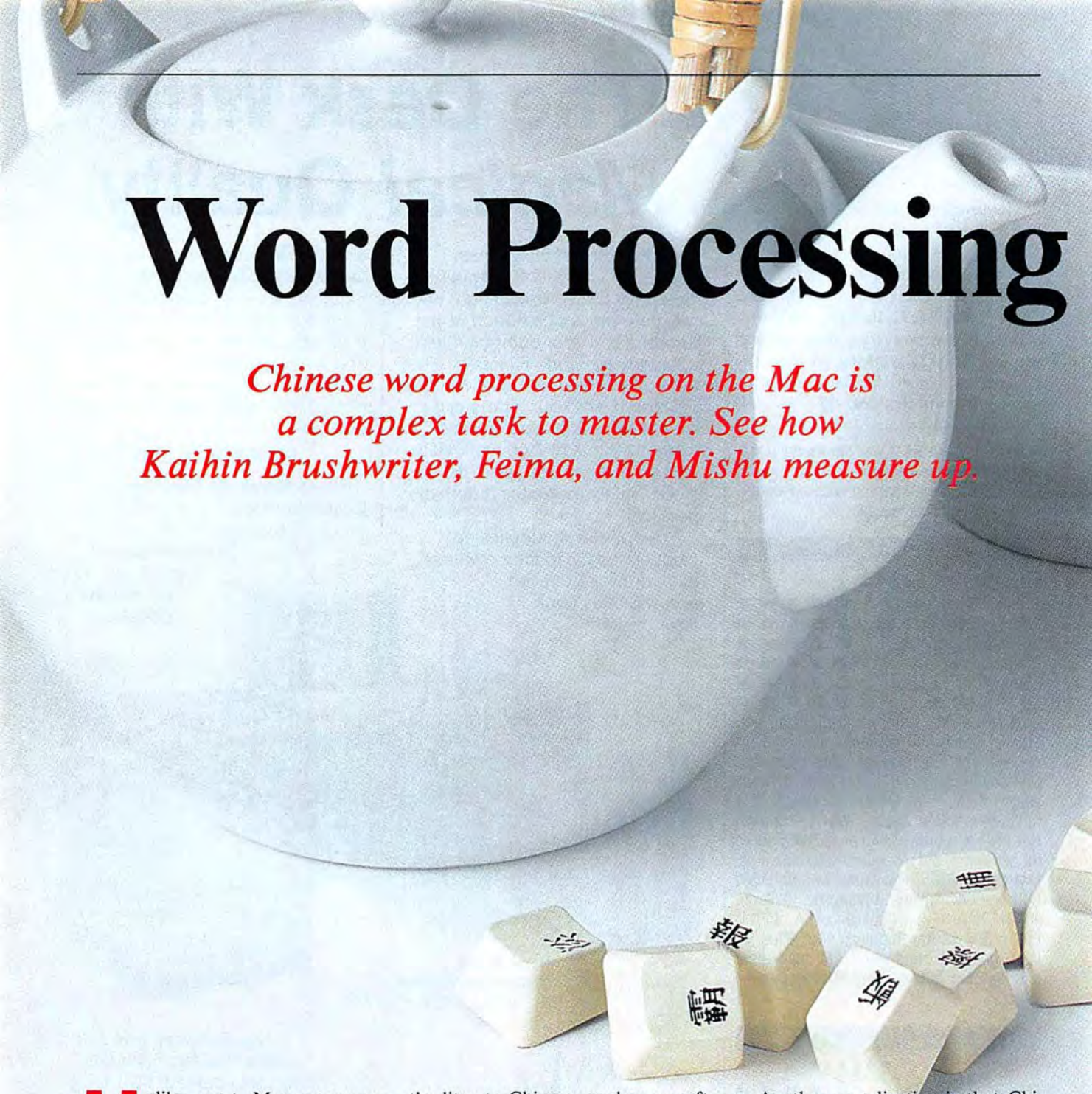
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Word Processing

Chinese word processing on the Mac is a complex task to master. See how Kaihin Brushwriter, Feima, and Mishu measure up.



Unlike most Mac programs, these word processors require years of study to use — the number of years needed to learn Chinese. But to those fluent in Chinese already, whether as a mother tongue or a second language, these programs may represent a quantum leap in communication ability. Until recently, the complexity of the language has left the vast majority of Chinese users with handwriting as their only means of written communication. There are Chinese typewriters, though the machines are large, expensive, and hard to use.

Instead of combining just 26 letters, the literate Chinese speaker, or software program, must master at least the 4,000 most commonly used characters, the semantic symbols of the Chinese language. Each character has a meaning and a one-syllable pronunciation. For each syllable available in Mandarin Chinese, there are five possible tones that denote different meanings. Any particular syllable and tone may be shared by dozens of characters. For instance, the characters represented by *shì* can mean *city, scholar,* or *world,* depending on how you pronounce it. In spoken Chinese, the context provides the only means of distinguishing, and puns proliferate.

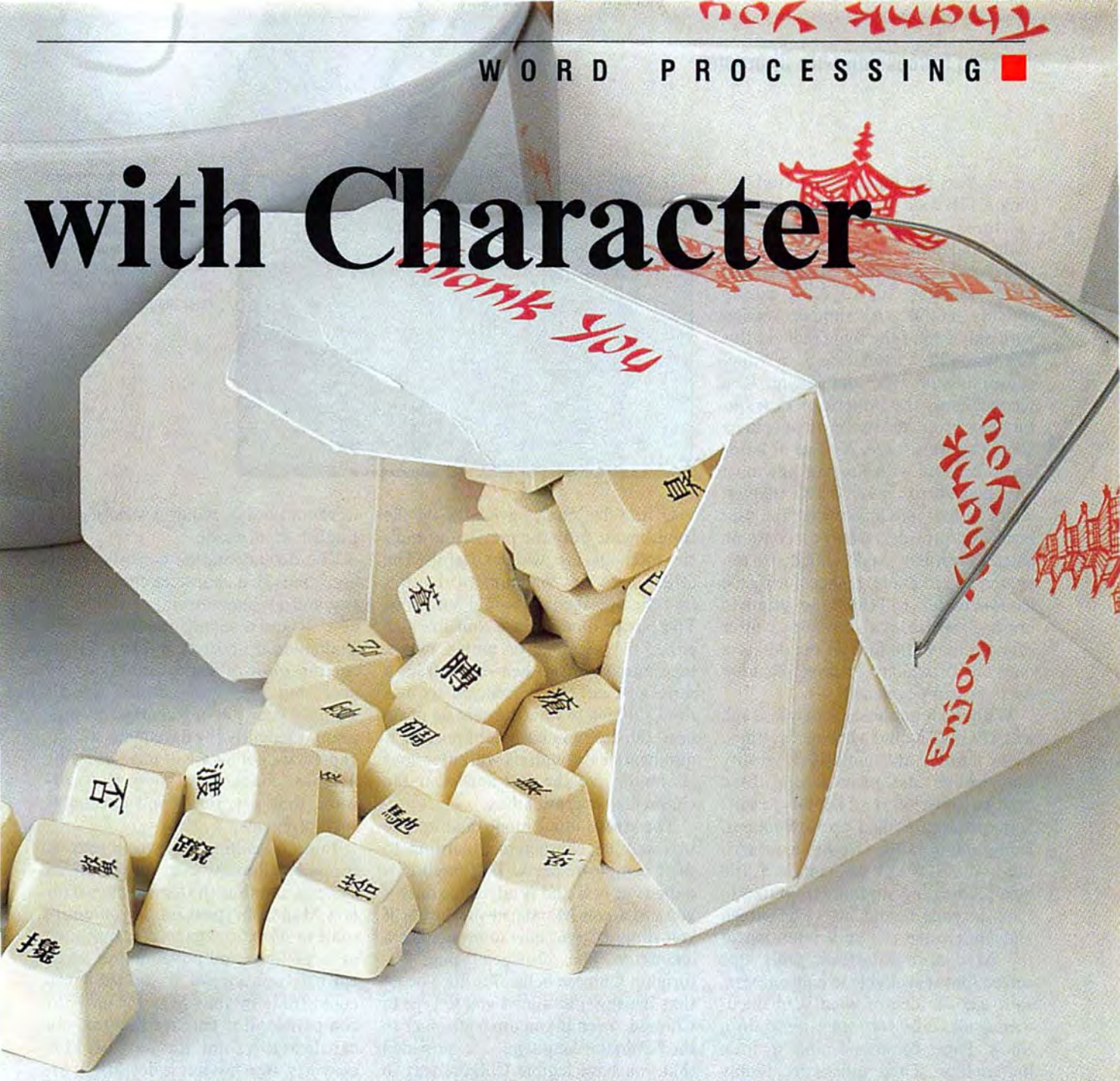
Another complication is that Chinese consists of eight regional dialects with hundreds of local varieties that differ so drastically that speakers from different regions generally cannot understand one another. This problem existed more than 2,000 years ago when the First Emperor used the standardization of Chinese characters across regional boundaries to unify the Warring States into the Chinese Empire. Over time, Mandarin became the standard dialect and the most widely used.

CHARACTER ANALYSIS

Some contemporary political rami-

WALTER JEBE II

with Character



fications still color the Chinese language and complicate its interface with the West. To combat illiteracy, Mao Ze-dong instituted the reform of Chinese characters into simplified versions, but Chinese speakers outside of the People's Republic of China continue to use the traditional forms. Several romanization systems have been developed to facilitate the growing need to represent Mandarin words in western languages. The PRC's Hanyü Pinyin system (pinyin), established in 1958, is emerging from the pack internationally and is already linked to the newest wave of language reform: electronic communication.

In terms of software, a Chinese language program should consider the needs of second-language speakers, native Mandarin speakers, and speakers of other dialects. Although it should ideally allow for non-pinyin output, users would be well advised to take time to learn pinyin, because it seems to be here to stay. In light of the simplified/traditional character rift, the most friendly programs will support both, as the simplified-character user will find traditional character mastery a chore and vice versa. The most literate Chinese speaker, however, will inevitably have to master both.

With these standards in mind, we tested three software packages designed for word processing in Chinese: Kaihin ("Happy") Brushwriter, Feima ("Flying Horse"), and Mishu ("Secretary").

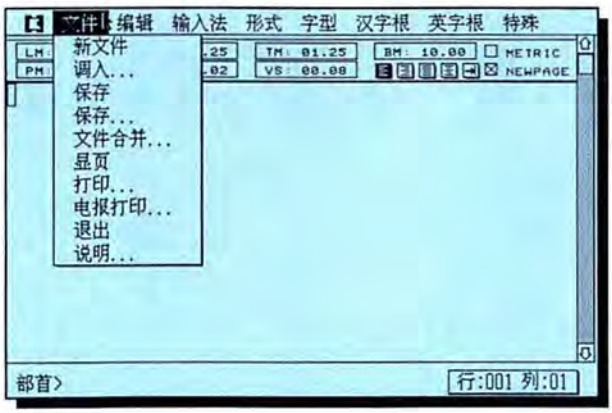
THE HEAVYWEIGHT

Kaihin Brushwriter promises to be everything to everybody. This pro-

BY PAMELA SUE BURDMAN

gram offers five input modes (radical, pinyin, GB code, row column, and Telex), three user levels, six large printing fonts, and both simplified and traditional character output. Brushwriter *is* a heavyweight: Its 12 disks eat up roughly 8,000K. A trimmer version with only two of the fonts reduces this substantially. Installation is a time-consuming process, and Pacific Rim Connections, the American distributor, has given its share of telephone support at this stage. A piece of hardware included with the package must be attached with a 9-volt DC adapter, which, a footnote informs us, the user needs to provide. Another common cause of installation difficulty, also relegated to a footnote, is that storing file icons in folders will cause the system to crash. This creates an unwieldy clutter of more than 100 files on the desktop, only one of which — the application itself — can be opened.

With incomprehensible names such as !AEG″8FK and khrkey.zap, these icons portend the unpleasant reality that awaits the unsuspecting Mac user. Brushwriter is an IBM-type software program dolled up with menus, icons, and a mouse. Kaihin has sacrificed WYSIWYG altogether. Little boxes indicating anything from tabs to fonts to page layout litter the screen and undermine the very intention of the Macintosh interface. Only one screen font is available in only one size, so to get an idea of what your document looks like you must resort to a Show Page command and a little imagination. These quirks are doubly maddening in light of the absence of one friendly IBM-ish trait: The program doesn't allow you to use the Command key to activate menu items from the keyboard. Although documents can appear on the screen in either simplified or traditional characters, regrettably, the character-generation box at the bottom of the screen accommodates only simplified characters. The convenience of having the choice is minimized, since the traditional-character user must become familiar with the simplified versions as well. Its large fonts are absurd for any practical applications: The smallest available is 16 point.



Kaihin Brushwriter was written for the IBM world. It does come with 8,000 characters for simplified and traditional pinyin, GB code, row column, and Telex inputs.

Of the five modes available on the Input menu, only the pinyin and radical methods are widely useful. The other three rely on numerical codes that the average user would not know. The pinyin mode allows you to enter either pinyin alone or pinyin plus a tone number. You then select from a series of characters displayed six at a time, tabbing to view the next set of six until the desired character appears. A number one through six will enter your character into the text and clear the character-generation box.

The stroke-input mode enables you to assemble characters according to their composite parts. This method is tedious at best and is advisable only if you are a non-Mandarin speaker or if you simply forget how to pronounce a character. The 50-page Typing Tutorial in Chinese belies Kaihin's boast that Brushwriter allows you to type in Chinese "even if you are a stranger to the Chinese language ... provided that you have legible Chinese text to copy from." Fortunately, though, the Beginner Level is very forgiving and second-guesses you when you make inputting mistakes. You may also select an option to show menu items in English. The 36 most commonly used characters can be generated merely by pressing one key and then Return, a time-saving function that unfortunately cannot be accessed under the other input methods. The program also includes stickers for labeling your keys. User Phrase, a feature on the Special menu, is a time-saver that allows you to program in commonly used character strings to reduce the steps involved in repeated entry. Inputting English words or phrases requires selecting the English input mode.

The documentation consists of the user manual, a character construction key, and a typing tutorial — all in Chinese — and a supplementary manual available only in English. The manuals contain most of the information you need, but their presentation doesn't simplify your job of learning this program. Evidently the developers in Singapore are not aware of most user difficulties. Since they know the software, they say, they don't encounter such problems.

In sum, Kaihin Brushwriter may be the only alternative to pinyin-driven systems and thus the logical choice for non-Mandarin speakers. If you desire some of its extravagant offerings, such as large fonts and horizontal or vertical axis printing, or if you wish you could trade in your Mac for an IBM compatible, it is perhaps the best you can do at this point. But for most Mac converts, Brushwriter is downright archaic and hardly worth $600 and half of a 20-megabyte hard disk.

CREATIVE VOCABULARY?

Feima presents a far more manageable solution to some of the problems of Chinese word processing, while taking advantage of the Mac interface. It offers both simplified and traditional characters, but only in one font and one size. A pinyin-based system, this program makes use of a Pinyin Pad that floats above the text of your document. You can move the pad around the screen when you need to see the area underneath it.

Character selection takes place

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Doug Clapp's Word Tools 1.2 42.
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Affini File 45.
Tempo II 79.

Aldus
FreeHand 348.
PageMaker 3.0 397.

Alsoft
DiskExpress 1.5 34.
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MultiDisk 32.

Altsys
FONTastic Plus 54.
Fontographer 238.

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Stepping Out 2.0 52.

Bible Research Systems
The Word (KJV, NIV, NKJV, RSV) . 179.

Blyth Software
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Bootware Software
ResuméWriter - Student Version 18.
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Moebius 23.
Shufflepuck Cafe 23.
Where Is Carmen Sandiego? 27.

Casady & Greene
Crystal Quest 2.2 25.
Crystal Quest 2.2 w/Critter Editor 41.

Discovery Software
Arkanoid 26.

Electronic Arts
Chessmaster 2100 30.
Chuck Yeager's Flight Trainer 31.
Patton vs. Rommel 14.
Scrabble 25.

Epyx
Sub Battle 29.

Infinity
Go 26.
Grand Slam Tennis 26.

Mediagenic
Manhole 30.
Might & Magic 35.
Quarterstaff (Requires 1 Megabyte) 29.
Shanghai 23.
Universal Military Simulator 29.

Microprose
Pirates! Call

Microsoft
Flight Simulator 33.

Miles Computing
Fool's Errand 31.
Harrier Strike Mission II 31.

Mindscape
Aussie Joker Poker •Balance Of Power (1990 Edition) •Colony •Crossword Magic •Deja Vu •Deja Vu II (Lost In Las Vegas) •Shadowgate •Trust And Betrayal •Uninvited 29.ea

PBI Software
Strategic Conquest Plus 1.3 34.

PCAI
Lunar Rescue 33.
Mac Racquetball (Req. 1mb) 36.
MacCourses 28.
MacGolf 34.
MacGolf Classic 53.
Road Racer 39.

Silicon Beach Software
Apache Strike •Beyond Dark Castle • Dark Castle 26.ea

Sir Tech
Wizardry 35.

Sphere
Falcon 31.
Gato 1.4 26.
Orbiter 26.
PT 109 26.
Solitaire Royale 19.
Tetris (Mac II W/Color Only) 24.
Tetris (Plus, SE & Mac II - B & W) .20.

Spinnaker
Sargon IV 28.

XOR Corporation
NFL Challenge 58.
Pro Challenge 28.

Music

Ars Nova
Practica Musica 2.07 74.

Bogas Productions
Studio Session 48.
Super Studio Session 74.
Country • Heavy Metal • String Quartet 14.ea

Brøderbund
Jam Session 28.

Coda
Finale Call
Mac Drums 32.

Electronic Arts
Deluxe Music Construction Set 2.5 . 84.

Farallon
MacRecorder 139.

Great Wave Software
ConcertWare + 4.0 39.
ConcertWare + MIDI 4.0 78.

Impulse
Audio Digitizer 140.

Mark Of The Unicorn
Professional Composer 2.2 395.
Professional Performer 2.4 325.

Opcode
Music Mouse 39.

Passport Designs
MasterTracks Jr 99.
MasterTracks Pro 3.0 258.
Notewriter 169.
Passport MIDI Interface 97.

Resonate
Listen 2.0 69.

Accessories

Addison Wesley
Inside Macintosh (Vol. 1, 2, 3, & 4) ... 21.ea
Inside Macintosh (Vol. 5) 23.

Bantam Books
dBASE Mac, The Official Handbook 22.
Illustrator 88: Designers Handbook . 19.
The Complete HC Handbook (2nd Ed.) 23.

Datashield
MacDirector 120.

Ergotron
MacTilt SE 68.
Mouse Cleaner 360° 14.

Golden Ribbons
ImageWriter Ribbons - Black 4.
ImageWriter Ribbons - Blue, Brown, Green or Red 6.
ImageWriter Ribbons - Multi Color ... 8.

Kalmar Designs *Rolltop Disk File*
Teakwood (Holds 45 Disks) 19.
Teakwood (Holds 90 Disks) 29.

Kensington Microware
System Saver Mac Fan (Beige or Plat) ... 64.
Turbo Mouse (512k & Plus) 109.
Turbo Mouse ADB (SE & II) 109.

Kraft
Quickstick (512k & Plus) 50.
Quickstick ADB 50.

Mac Packs *Gray, Navy or Wine*
ImageWriter Bag 49.
Mac Plus/SE Bag 68.
Mac SE Bag Xt (Extended Keyboard) 74.

Mac Zone
7 Outlet Noise & Surge Protector 24.
Mouse Pad - Blue, Gray, or Red 6.
Mac Opener (Tool Kit w/Grounding Strap) ... 20.

Microsoft Press
Excel In Business 20.
Working With Word 19.

ScanCo
Mac Table w/Cabinet 445.

Smith & Bellows *Diskette Case*
Mahogany (Holds 96 Disks) 29.

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Double Sided - Bulk (Min.50) 1.35
Single Sided - 10 Pack 13.
Single Sided - Bulk (Min.50) 1.20

Sopris Softworks *Blue, Gray or Red*
ImageWriter I or II Bag 45.
Mac 512/Plus/SE Bag 50.
Mac SE Bag (Extended Keyboard) ... 68.

Williams & Macias
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Labels, 216 (LaserWriter) 20.
myDiskLabeler (ImageWriter) 30.
myDiskLabeler (LaserWriter) 33.

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Quick Basic 69.
Word 4.0 254.
Works 2.0 198.
Write 112.

Mindscape
S.A.T./ Perfect Score 46.

Monogram
Business Sense 274.
Dollars & Sense 4.1 80.

Nolo Press
For The Record 29.
Will Maker 33.

Nordic
Alphabetizer • Bodyworks • Clockworks
Coinworks • Earthworks • Flashworks
Lemonade Stand • Naval Battle •
Preschool Disk 1 • Preschool Disk 2 •
Word Search 28.ea

Odesta
Data Desk Professional 2.0 288.
Double Helix Release 2 337.
GeoQuery 1.0 205.

Olduvai Software
Read-It! 2.0 199.
Read-It! TS 79.
MultiClip 36.

Paragon Courseware
Nisus 295.
QUED-M 105.

Peripherals Computers & Supplies
KaleidaGraph 1.1 124.
Versa Term Pro 2.20 195.
Versa Term 3.20 68.

Personal Bibliographic
Pro-Cite 198.

Postcraft International
Laser FX 114.

Preferred Publishers
DAtabase 74.
Vantage 58.

Select Micro Systems
MapMaker 3.X 219.

Shana Enterprises
Fast Forms Construction Kit 89.

Silicon Beach Software
Digital Darkroom Call
Silicon Press 48.
Super 3D Call
Super Paint 2.0 Call

Softview
Mac In Use 2.0 45.
MacInTax Federal 88 64.
Tax View Planner 62.

Software Ventures
Microphone 1.5 109.
Microphone III 221.

Solutions
BackFax 129.
SmartScrap & The Clipper 2.0 46.
Super Glue 51.
The Curator 78.

SuperMac Software
Disk Fit 1.5 54.
Network Disk Fit 199.
PixelPaint 2.0 Call
Sentinel 154.

SuperLaserSpool - Multi User 199.
SuperLaserSpool 2.0 - Single User . 79.
SuperSpool 5.0 54.

Survivor Software
MacMoney 3.2 61.

Symantec
Just Enough Pascal 48.
Lightspeed C 3.1 147.
Lightspeed Pascal 2.0 89.
Lightspeed Pascal 2.0 & J.E. Pac. . 105.
MacSQZ! 1.5 49.
More II 249.
S.U.M. (Symantec Utilities/Mac) 69.

Symmetry
Acta Advantage 69.
HyperDA 38.
Picture Base 1.2 & Pb Retriever 54.

T/Maker
EPS Illustrations 75.
WriteNow 2.0 109.

TML Systems
TML Pascal II 3.0 60.
TML Pascal II 3.0+MPW 3.0 114.

TOPS
InBox Personal Connection 2.2 73.
InBox 2.2 Starter Kit 195.
TOPS (Dos Version) 117.
TOPS (Mac Version) 148.

Traveling Software
Lap-Link Mac 2.0 84.

True Basic
Algebra 33.
Arithmetic 33.
Calculus 33.
Discrete Mathematics 33.
Pre-Calculus / Trigonometry 33.
Probability Theory 33.
TrueSTAT 33.
True Basic 2.0 57.
3-D Graphics Toolkit 47.
Business Graphics Toolkit 47.
Scientific Graphics Toolkit 47.

WordPerfect Corp.
WordPerfect 185.

Zedcor Inc
DeskPaint/DeskDraw 2.0 65.
ZBasic 115.

Hardware

3M
40 Meg Dc-2000 Tape Cartridge 23.

Abaton
InterFax 12/48 Fax/Modem Call
Pro Point ADB (SE & II) Call

Asher Engineering
Turbo Trackball 69.

CH Products
Flightstick (512k & Plus) 89.
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Platinum 170 II/I 1598.
Platinum 300 II/I 2800.
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Connor
Zone 100-SE/II 999.

DataDesk
Mac 101 Keyboard (all Macs) 145.

Daystar Digital
Daystar 16MHz 030SE 975.
Daystar 25MHz 030SE 1595.
Daystar 33MHz 030SE 2395.
Daystar 33/030-II 4680.
Lt 200 MC Localtalk Board 279.
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MacSnap 524e (512kE to 1mb) 284.
MacSnap 524s (512kE to 1mb W/SCSI) .. 378.
MacSnap 548 (512k to 2mb) 498.
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A+ Mouse ADB 85.

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Turbo Bridge 345.
Turbo Net St: DB-9 & DIN-8 29.
Turbo Net: DB-9 & DIN-8 22.

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Grappler "C/Mac/GS" 78.
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Grappler Spooler 39.

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TOPS Teleconnector (DB-9) 38.
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within the Pinyin Pad using the standard or phrased methods. Standard pinyin entry allows input of pinyin alone when the tone number is unknown, as well as pinyin together with a tone number to shorten the list of characters to choose from. The well-conceived phrased pinyin method lets you type in a series of up to 12 syllables. The program automatically chooses characters for you and displays them within the Pinyin Pad. Any characters that are incorrectly chosen — and there usually are some — can be replaced with a few mouse clicks.

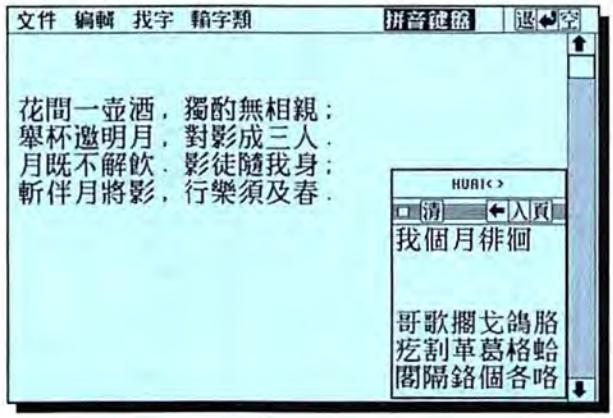
A handy variation of the phrased method allows you to input correctly strings of numbers, such as "four million, five hundred seventy-two thousand, two hundred nineteen," by using the Caps Lock key. The program would otherwise select a series of undesired homonyms. Another impressive feature lets you input letters from the Japanese syllabary to combine with characters in creating Japanese text. Feima reserves 196 spaces for the user's own vocabulary. These characters may be drawn from Feima's 4,060-character auxiliary dictionary. Or you can create characters not included in Feima's dictionary with a floating Create Pad that works on the fat-bits theme.

Editing will be a breeze for the veteran Mac user, as Feima provides most basic Macintosh editing functions. A ruler can't be inserted into the text, however, and the program doesn't support spacing and margin changes within a document. Nor does it accommodate more complicated word-processing functions such as centering text, or even multiple fonts. If you want your printout to show 20 characters per row, it will correspond to the screen display in true WYSIWYG fashion. You may also choose 30- or 40-character long lines, but since the screen fonts are larger than the printing fonts, the screen display won't reflect the change. The present version can't be printed on the LaserWriter, except through screen dumps.

Differentiating between the various pads and input modes is confusing at first. The use of certain keys to perform functions within the pads is counterintuitive. The keypad – and = keys are used for deleting. If you accidentally hit the Delete key within the pad, you'll lose some of your document. Also irksome, Feima doesn't let you punctuate the text directly, rather forcing you to select punctuation via the Pinyin Pad and a punctuation code — and this only from the standard pinyin method. With practice these idiosyncrasies can be compensated for and character input begins to grow on you. It starts to feel easy, speedy, even fun! After all, it may not be as fast as typing English, but it's probably faster than you've ever typed in Chinese.

You will likely find yourself wishing that the Feima developers had listed characters in order of most common usage, rather than in the arcane dictionary order that detracts from overall efficiency. The use of the Control key before each tone number calls for repeated awkward hand motions. Certain irregularities in the available characters are disturbing: Some commonly used characters seem to be missing, certain simplified characters show up on the traditional character lists, and some characters available by one method seem to be missing with another.

Like Brushwriter, Feima does not support the Hierarchical File System, and the manual neglects to clarify this point. The manual is in English and is locally clear, but the sequence of information requires repeated flipping back and forth before you can grasp all the basics. The index helps, but the manual falls short of its stated goal of introducing the Mac to the uninitiated. The Feima people are committed to developing innovative and user-friendly Chinese language software for the Mac environment, and future versions — as well as a database and spreadsheet under development — promise to shift more of the burden from the user. Once you've bought the $585 package, upgrades are available for just $45.



Feima follows the Mac interface the best of the stand-alone applications evaluated here. The program has 7,068 characters and allows users to create their own.

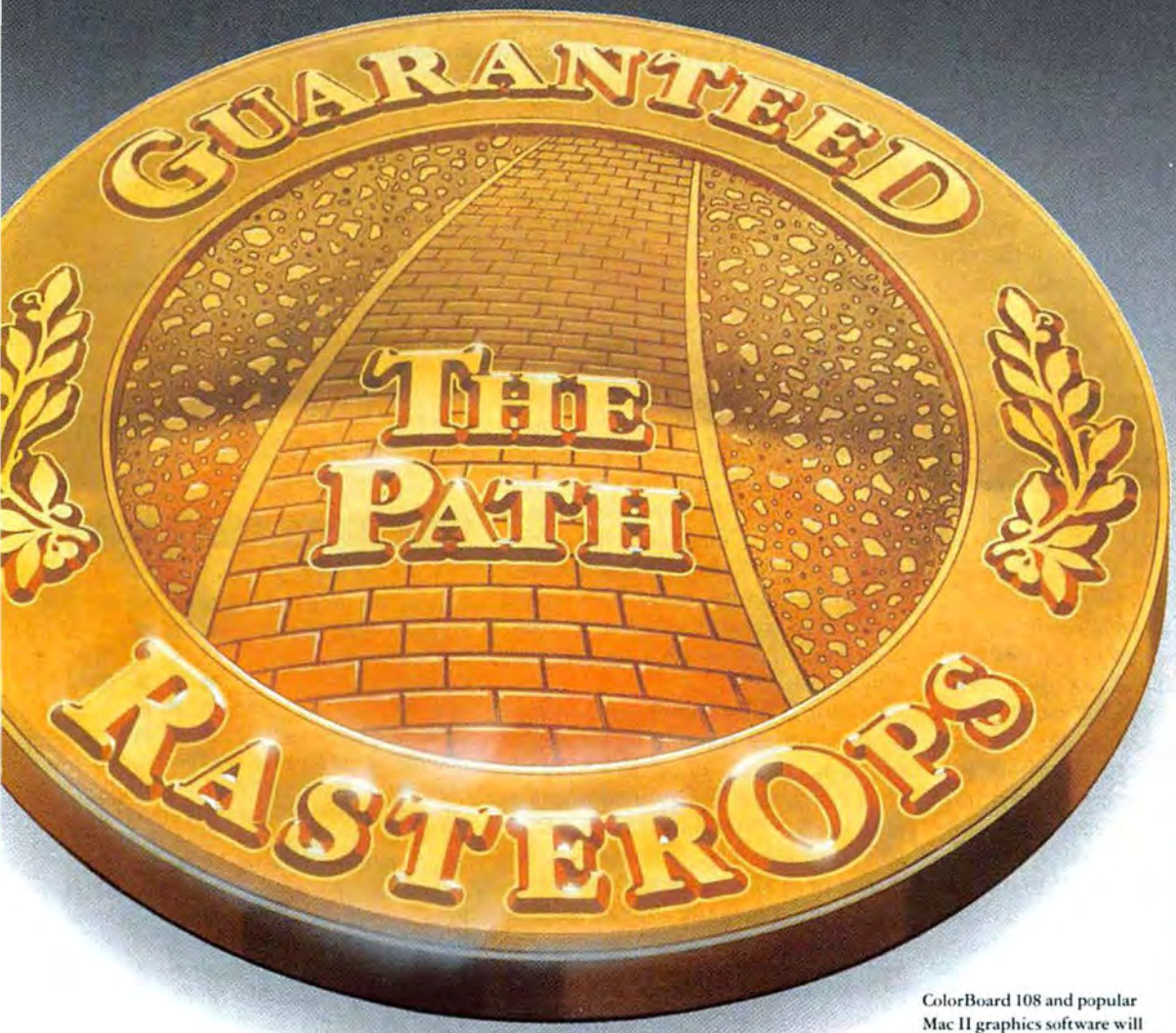


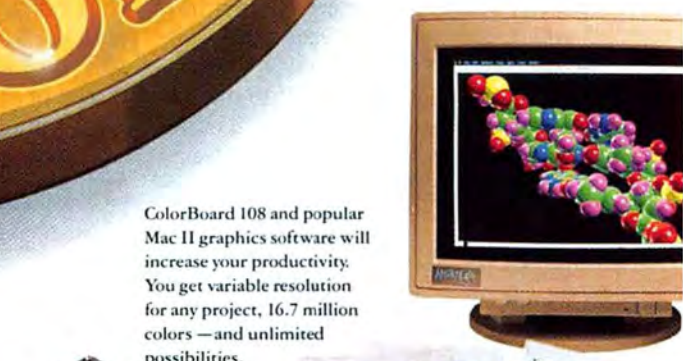
Mishu is actually a desk accessory that turns MacWrite and Microsoft Word into a Chinese word processor. It also works with Cricket Draw, HyperCard, and any program that reads PICT files. With certain font modifications implemented into the current version, Mishu documents can be poured into PageMaker and Ready,Set,Go!.

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through the ingenious use of a desk accessory that turns MacWrite and Microsoft Word into Chinese word processors: quite an accomplishment for a little thing! This no-frills program offers just pinyin input and only 3,755 simplified characters. Consuming a modest 292K, it's the only one of the three programs that can be used with less than a megabyte of memory. Unlike Kaihin and Feima, which encounter bit-mapping problems, it can also accommodate the Mac II screen.

A user not only can choose between MacWrite and Word, but also can paste material from Mishu into HyperCard, MacPaint, MacDraw, and any other program that reads PICT files. The Mishu window generates a pop-out menu that gives a user a choice of using the DA with MacWrite, Word, or a PICT program. Selecting any of these brings up a character selection box, which displays ten characters at a time in the order in which they should be: according to frequency of use. You can use the keyboard or the mouse to indicate your choice. Your character selections will then be held in a character-buffer box, which stores up to ten characters waiting to be entered into your main text. Keyboard shortcuts are available for 30 commonly used characters. The developers had the foresight to assign characters, when possible, to sounds associated with them. Character repetition is quite common in Chinese and can be accomplished with a keyboard command. Chinese numerals are automatically entered when you type numbers into the Mishu Window. You can add or edit characters with ResEdit, FontEdit, or FONTastic. Text created in the PICT character buffer can be pasted into the Scrapbook or any paint program, though it cannot be edited.

As opposed to version 1.5, version 2.1 of Mishu has new fonts that let a user paste documents into PageMaker and Ready,Set,Go! with no compatibility problems. Printing out documents isn't a problem thanks to System 6.0.2 — a laser printer will print out Mishu documents. Suzhou, Mishu's standard font (and the Venice of China) offers 9- through 24-point sizes, just like MacWrite. You input characters using the Mishu window that appears at the bottom of the screen when the Mishu DA is selected. This program recognizes pinyin with no tone numbers.

The manual is brief, clear, and to the point. It anticipates the information you need to know. In reading it, you not only feel well prepared for using Mishu, but you also gain some insight into how it works. Of course, the design of the program means there simply isn't a lot to learn — a testimony to the developers' sincerity in working with the Mac. This program has certain limits because the Macintosh system was not designed to handle large numbers of fonts. Mishu uses 20 fonts to infiltrate characters into MacWrite via the Clipboard. Documents more than 200 characters long may slow the Mac down a bit, so the creation of lengthy documents could cause frustration. LaserWriter printing requires System 6.0 and is ploddingly slow.

Mishu is unassuming brilliance at work: a simple solution to a complex problem. If you think WYSIWYG should be taken for granted and find learning new programs tedious, Mishu will make your day — especially with a price tag of $89, a mere 15 percent of what the others cost. Just make sure that you can live with simplified characters and a finite selection of them.

There is probably no Chinese word processor that doesn't require compromise. They're simply too new. The good news is that later versions continue to be developed. Before you make an expensive decision, be certain that the publisher or dealer will provide you with low-cost upgrades.

WHEN SHE'S NOT IN CHINA TEACHING MIDDLE SCHOOL STUDENTS, PAMELA SUE BURDMAN IS A FREE-LANCE INTERPRETER IN SAN FRANCISCO. SHE PREPARED FOR THESE ROLES BY STUDYING CHINESE PHILOSOPHY OF LANGUAGE AT PRINCETON AND FUDAN (SHANGHAI) UNIVERSITIES.

MACUSER RATING

Kaihin Brushwriter ½

Follows Mac Interface	■ □ □ □ □
Printed Documentation	■ ■ □ □ □
On-Screen Help	None
Performance	■ ■ □ □ □
Support	■ ■ ■ □ □
Consumer Value	■ ■ □ □ □

Comments: Despite its many features, overall performance does not justify its price or disk space. **Best Features:** Beginner, intermediate, and advanced user levels and five input methods. **Worst Features:** Unfriendly to Macintosh users. ImageWriter fonts are too large for normal business use. Printing is slow. **List Price:** Professional Package, $599; Educational Package (limited number of fonts), $399. Published by Kaihin Research, Inc., Singapore. Distributor: Pacific Rim Connections, 3030 Atwater Drive, Burlingame, CA 94010; (415) 697-0911. Version 2.0 for the Mac SE reviewed. Copy-protected.

MACUSER RATING

Feima ½

Follows Mac Interface	■ ■ ■ ■ □
Printed Documentation	■ ■ ■ □ □
On-Screen Help	None
Performance	■ ■ ■ ■ □
Support	■ ■ ■ □ □
Consumer Value	■ ■ ■ □ □

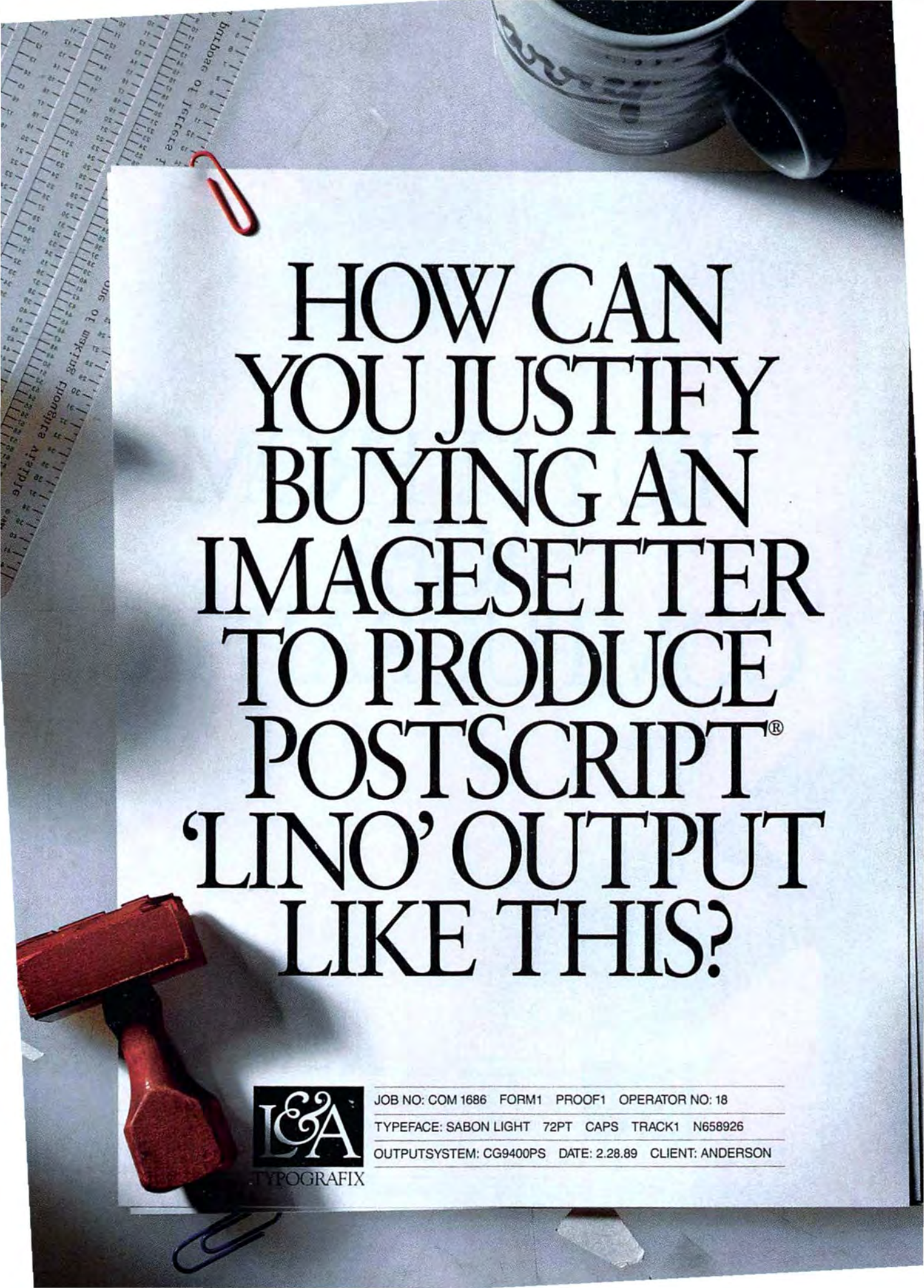
Comments: Innovative approach to Chinese word processing with room for improvement. **Best Features:** Phrased pinyin methods, Japanese Kana keyboard. **Worst Features:** Confusing input commands. Doesn't support LaserWriter. **List Price:** Feima-P Professional Package, $585; Site License/Feima-S, $2,000. Published by Wu Corporation, P.O. Box 699, Avon, CT 06001; (203) 677-1528. Version Feima-P reviewed. Copy-protected.

MACUSER RATING

Mishu ½

Follows Mac Interface	■ ■ ■ ■ ■
Printed Documentation	■ ■ ■ ■ ■
On-Screen Help	None
Performance	■ ■ ■ ■ □
Support	■ ■ ■ ■ ■
Consumer Value	■ ■ ■ ■ ■

Comments: Clever, practical, and reasonably priced desk accessory to input Chinese. **Best Features:** Characters ordered by frequency of use. Overall simplicity and price. **Worst Features:** Slows Mac on lengthy documents; only simplified characters. **List Price:** $89. Published by Xanatech, 20 Fresh Pond Place, Cambridge, MA 02138; (617) 492-7463. Version 2.1 reviewed. Not copy-protected.


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MacUSER LABS

Making a Small Net Work



ILLUSTRATION: ROBERT PIZZO

MacUser Labs presents a triple bill: LocalTalk versus Ethernet, TOPS versus AppleShare, and five Macs vying for the title of Fastest File Server.

When you bought your first couple of Macs and a LaserWriter, the salesperson told you that every Macintosh came with a built-in network. All you had to do was buy a few inexpensive PhoneNET connectors and plug them together to have your Macs communicating effortlessly with your printer. No muss, no fuss. So you did, it worked, and the computer dealer had another satisfied customer.

But times have changed, and simple Mac-to-printer connectivity is no longer enough. You started with two Macs; now you have a dozen. You want to send E-mail to coworkers hundreds of feet — or miles — away. Your work group needs to share sales figures and

other records on a multiuser database. And instead of relying on floppy disks and SneakerNet to transfer files, you want to send them over the wires at the click of a mouse.

Congratulations — you've graduated from stand-alone computers to a small work group. Electronic work groups are the true lifeblood of most organizations; even large networks consisting of hundreds of Macs are usually broken down into work groups of 5 to 15 machines.

But as your needs have grown, so have the system requirements. LocalTalk and a few cables are no longer enough. To optimize your work group's performance, you may need more powerful tools, such as Ethernet or a file server. But where do you start? Is a network speed booster such as Ethernet worth the cost? Or would a file server be a better choice?

To help you spend your networking dollars wisely, MacUser Labs evaluated the options in the three areas that most affect work-group performance: the circuitry that sends electronic signals between computers, the type of computer used as a file server, and the server software. We did our testing on a network containing 2 to 15 Macintoshes, since that represents the typical work-group configuration. Our coverage is in two parts. The first report looks at communications circuitry and server hardware, while the second pits AppleShare against TOPS in the software arena.

The cheapest way to transmit network signals is to use LocalTalk, which consists of the Mac's built-in circuitry plus the appropriate cables. Our first report, "Signals and Servers," compares the cost-effectiveness of LocalTalk with that of Ethernet, a popular replacement that's available either as an internal card or an external box. Ethernet is much faster than LocalTalk; unfortunately, it's also much more expensive. Does Ethernet pay for itself on a small network? Read on and see.

For many people, upgrading a network means adding (or upgrading) a file server. A file server is simply a computer (some kind of microprocessor) with a hard disk attached, running special software. On a busy network, file servers can handle many chores. They can be print spoolers, repositories for shared files and multiuser databases, or the "post office" for an E-mail system. Unlike the files on your own hard disk, which are for your eyes only, the files (and folders) on a file server are potentially accessible to everyone on the network.

On a Mac network, the file-server hardware is usually another Macintosh. But since Apple now offers five kinds of Mac (six by the time you read this), the choice isn't as clear-cut as it might first appear. Can you use a Plus for a file server, or will you need a IIx? What about the new SE/30? Or how about a cheap PC with a DayStar server? How much RAM should the server have?

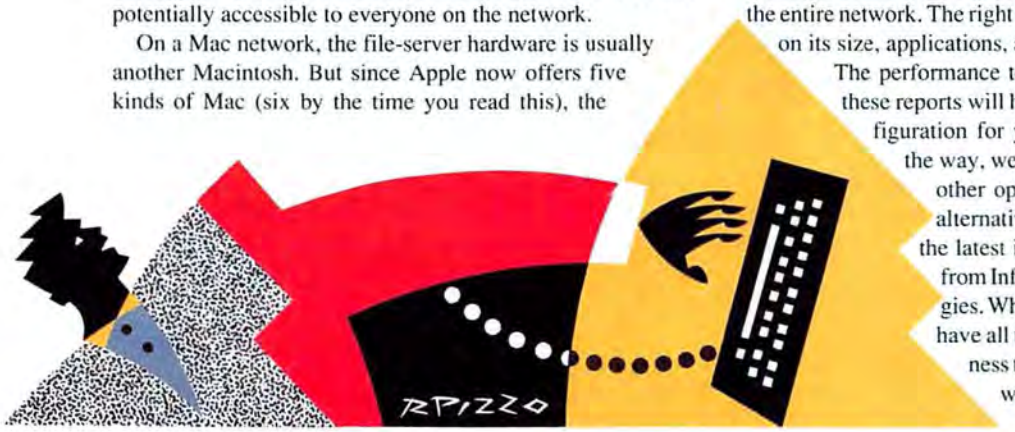


MacUser Labs compared the file-server performance of five different Macintosh models and one PC. We also checked their RAM requirements and evaluated when upgrading a file server might be more worthwhile than switching to Ethernet. You'll find our recommendations in the first report.

Once you've chosen your communications protocol and file-server hardware, you must still decide on server software. Our second report, "Two for the Node," looks at the competition between TOPS and AppleShare. Their approaches to file serving are vastly different; AppleShare is a centralized server requiring a dedicated Mac, while TOPS can be distributed over the entire network. The right choice for your network depends on its size, applications, and security concerns.

The performance tests and feature comparisons in these reports will help you determine the right configuration for your particular situation. Along the way, we've sprinkled a few tidbits about other options, including new LocalTalk alternatives from TOPS and Dayna, and the latest in file servers from Jasmine and from Information Presentation Technologies. When you're finished reading, you'll have all the information necessary to harness the horsepower you need for your work group.

— Aileen Abernathy



Signals and Servers

By John Rizzo

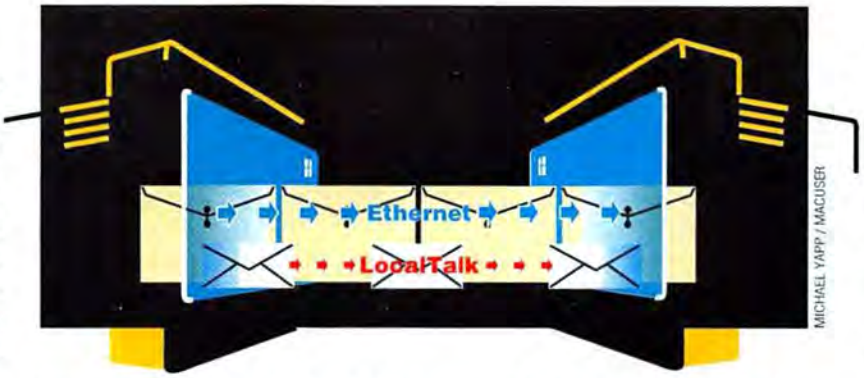


Figure 1: Although all network data travels at the same speed, Ethernet sends and receives packets of data more frequently than LocalTalk. Ethernet's packets are also larger.

Networking — not the kind you do over lunch but the communication between computers — is revolutionizing the way we work with other people. Documents that once were photocopied and hand-delivered are now sent electronically. The niceties of networking enable us to share information via multiuser databases. Instead of chatting by the watercooler, we send E-mail.

Today, most Macintoshes are part of work groups — small networks consisting of 2 to 15 Macs. As the size and complexity of the shared information increases, so does the need for speed. No one likes to watch the hands on the clock cursor spin for minutes at a time while a large file is copied between machines.

You've finally decided to bite the bullet and upgrade your network, but where do you start? Leafing through the magazine ads, you see a bewildering array of software, add-on boards, and cabling schemes. To help you sort out the options, MacUser Labs set up a 15-node network of Mac Pluses, SEs, IIs, a IIx, an SE/30, and even a PC. We then conducted exhaustive tests on three key components of small networks: communications circuitry, file-server hardware, and server software. The first two of these are covered in this report; the third — a comparison of TOPS and AppleShare — is the subject of the following report (see "Two for the Node").

The speed of intercomputer communications is one of the limiting factors in network performance. Accordingly, our first series of tests pitted LocalTalk, the Mac's built-in circuitry, against Ethernet, a popular replacement, to see which was more productive and cost-effective at the work-group level. We developed benchmarks that mimicked the typical tasks performed on a small network (see sidebar, "Network Benchmarks") and put LocalTalk and Ethernet through their paces using an SE with an AppleShare file server.

We then used the same battery of tests to evaluate the performance of five different Macintosh models plus a PC as file servers. This time around, LocalTalk and AppleShare were the constants, and the variable was the machine being used as a server.

Some of our results may surprise you. But before detailing our findings, let's take a short detour through the Byzantine world of network communications, starting with AppleTalk.

Blueprint for a Network

AppleTalk isn't a wire, a circuit, or a piece of code. It's a set of specifications, a blueprint that defines everything about the Macintosh network. AppleTalk defines the built-in hardware that sends signals out of the Mac's printer port. It also defines the signals themselves. It defines how files will be passed along the network, how Macs will recognize each other over the network, and how a file server will appear on your Macintosh's desktop.

The blueprint for AppleTalk is based on an industrywide standard for telecommunications protocols. This standard, called the Open Systems Interconnect (OSI) reference model, was developed to promote connectivity among different kinds of computers and operating systems. The OSI model is a modular approach that breaks up the different aspects of moving data through a network into specific, interconnected tasks called *layers*. There are seven layers in all, each building on the one below it. Because the layers are modular, each can be replaced with an equivalent layer that also follows the OSI model.

In AppleTalk's implementation, LocalTalk makes up the bottom two layers. In effect, LocalTalk consists of three things: a chip near the printer port that sends and receives network signals, a software driver that controls data transmission, and LocalTalk cabling. The cables can be swapped out for PhoneNET or fiber-optic cabling. The chip and the accompanying software can be replaced by other OSI-based standards such as Ethernet.

Note that when you substitute Ethernet for LocalTalk, you replace only a small part of AppleTalk; the rest remains intact. Thus, you remain part of an AppleTalk network even if you switch to Ethernet.

The Ethernet Alternative

If you're a network speed freak, you may be familiar with Ethernet, the most popular replacement for LocalTalk. Originally developed at Xerox, Ethernet is an international standard for network communications that has long been available on minicomputers and PCs. More recently, Apple has endorsed it as a high-speed alternative to LocalTalk. It can transmit data at frequencies of up to 10 million bits per second (bps), while LocalTalk pokes along at 230,400 bps.

Ethernet replaces the LocalTalk chip

with a board in the Mac's expansion slot and has its own software driver, called EtherTalk, that handles data transmission. Instead of plugging a network cable into the Mac's printer port, you plug it into the connector on the Ethernet card, and you're ready for action.

Ethernet is faster than LocalTalk because of its high-powered transmitting hardware — not, as some people think, because of the thicker cable it often uses. Network signals travel at the same speed regardless of the wire. Ethernet is faster because it sends out more data during a given period. Higher frequency translates into greater speed from the user's point of view.

Ethernet has other advantages besides speed, but they primarily benefit large networks. For instance, performance degrades at a much slower rate than on LocalTalk. A LocalTalk work group or zone peters out at somewhere between 30 and 50 nodes; Ethernet can support 254 Macs. Ethernet also lets you hook up to larger networks with different operating systems, such as that of DEC's VAX minicomputers.

Speed Costs

Unfortunately, Ethernet is not cheap; add-on boards and external SCSI boxes run from $500 to $1,300 per Mac. But vendors are plentiful, so shop around for the best deal.

Kinetics was an early supplier of Ethernet boards for the Mac. Its EtherPort line includes add-on boards for the SE and II ($695) and the SE/30 ($795, not yet shipping at press time), and the EtherSC box for the Mac Plus ($1,150–$1,250). FastPath 4 ($2,795) is a bridge that lets you connect an Ethernet network to a LaserWriter or to a LocalTalk network.



Dove's FastNet line of Ethernet products ($599 – $1,249) is similar to that of Kinetics, with cards for the SE, SE/30, and II, and a SCSI box for the Mac Plus. Dove also makes the MaraThon LAN 020 ($1,499) for the SE, a board that combines Ethernet connectivity with a 68020 accelerator.

The cheapest way to add Ethernet to any Mac is with Adaptec's Nodem ($545 – $595), an external SCSI box that works with the Plus, SE, and II. A low-cost alternative for the SE is the IPT1000 from Information Presentation Technologies. This $495 board contains an AMD 7990 Ethernet controller and features direct memory access (DMA), which delivers data directly to RAM, bypassing the CPU and freeing it for other tasks.

New arrivals to the Mac Ethernet market include 3Com, which is marketing the EtherLink/SE board ($595), and Novell, which planned April ship dates for the NAE/1000 ($495) for the SE and the NAE/2000 ($595) for the II and IIx. Even Apple offers an add-on board for the II and IIx — the EtherTalk Interface Card ($699).

If you're thinking that these prices don't seem that bad, keep in mind that LocalTalk, which comes built into every Mac, is free (except for the cables). If you're like most of us, you'll need to justify that need for extra speed. However, keep an eye out for two new LocalTalk replacements, FlashBox and DaynaTALK. They can send data faster than LocalTalk and are substantially cheaper than Ethernet (see sidebar, "More Talk").

All Wired Up

The circuitry for both LocalTalk and Ethernet can transmit signals over a variety of cables, from twisted-pair wiring to coaxial cable to fiber optics. The standard LocalTalk cabling is twisted pair, a simple, two-wire scheme commonly used in phone wires. Ethernet generally uses coaxial cable, which is the same type of

Glossary



AFP — AppleTalk Filing Protocol, the part of AppleTalk that controls how users share files over a network. It handles access privileges and manages file- and record-locking. AFP is the standard network file system supported by Apple.

AppleShare — On the server side, Apple's Macintosh-only implementation of a dedicated AFP file server. On the client side, AppleShare is available for both Macs and PCs, and it provides access to any AFP server.

AppleTalk — The set of communications protocols that defines how resources such as printers and file servers are shared on a Macintosh network. Both AFP and LocalTalk are part of AppleTalk. AppleTalk is based on an industrywide standard called the OSI reference model.

bridge — Hardware or software that enables computers on different networks to communicate.

client — A network node that isn't a dedicated server and that accesses data from a server.

dedicated — Used exclusively as a file server. In other words, a computer that functions solely as a file server is dedicated.

distributed — All or part of local volumes can be shared with other computers on the network. Each node with a published volume can also be used simultaneously for other work. In a distributed network, file sharing doesn't require the dedication of any one computer as a server.

Ethernet — The primary communications circuitry used in many mainframe, PC, and UNIX networks. Originally developed at Xerox, Ethernet become an international standard for high-speed telecommunications. Racing along at 10 million bits per second, Ethernet has rapidly become the most popular replacement for LocalTalk. Ethernet boards and boxes can be used with a variety of wiring schemes, including twisted pair, coaxial cables, and fiber optics.

EtherTalk — Apple software that implements AppleTalk protocols over Ethernet. Other vendors of Ethernet cards also use EtherTalk.

file server — The combination of a computer, hard disk, and specific software (such as AppleShare or TOPS) that allows the files at one node to be shared by users at other nodes.

LocalTalk — A combination of the communications circuitry

wiring used for cable television.

As mentioned previously, your choice of wiring has little effect on network speed. In fact, Du Pont's fiber-optic cabling operates at the same speed as Apple's LocalTalk wire when used with the Mac's built-in LocalTalk circuitry, and at Ethernet speeds when used with an add-on Ethernet card.

Although you don't need to worry about speed when choosing wiring, you might want to consider the maximum distance the wire can carry a signal. This is a concern mainly for large networks, but it's useful information if you plan to expand your work group.

How far a wire can transmit a signal depends on how wide the wire is and how it's shielded and grounded. In general, the fatter the wire, the farther it will carry a signal before petering out. Apple's LocalTalk cable can relay a signal only 1,000 feet. Farallon's PhoneNET, which uses telephone wire and special connector boxes, extends the maximum distance to between 1,800 and 4,500 feet, depending on the gauge of wire used.

Fiber-optic cabling extends this even farther to 4,900 feet *between nodes* and can be used as a backbone for connecting work groups located some distance apart. It's impervious to electromagnetic interference and very difficult to wiretap — an important consideration for high-security installations. As you might expect, you pay a price for these benefits; Du Pont's fiber-optic cabling for the Mac costs a minimum of $300 to $600 per node. By contrast, PhoneNET is only $59.95 per node or $395 for ten nodes.

Switching Signals

When should you replace LocalTalk with Ethernet? To find out, we tested both of them on a network containing 2 to 15 Macs. Using an SE with an AppleShare file server, we measured the time it took to perform four tasks: print a file, copy a large file, open a server-resident file, and

More Talk



Want to boost the speed of LocalTalk without paying the price of Ethernet? Then take a look at FlashBox or DaynaTALK, two new LocalTalk replacements from the TOPS division of Sun Microsystems and Dayna Communications, respectively.

Each product consists of a hardware box, which sits between the Mac's network (printer) port and the LocalTalk wiring or PhoneNET box, and software that goes into the System folder. Both are designed to transmit network data at speeds between those of LocalTalk and Ethernet. FlashBox's maximum data rate is 770,000 bits per second (bps) — almost three times that of LocalTalk — while DaynaTALK zips along at 850,000 bps.

FlashTalk, the communications protocol used by FlashBox, has actually been used in TOPS' PC boards for several years. Before FlashBox arrived on the Mac, PCs on a TOPS network could talk with each other at FlashTalk speeds, but PCs could talk to Macs only at standard AppleTalk speeds.

Both FlashBox and DaynaTALK were expected to ship by March and to cost $189 per node, while Ethernet costs upward of $500 per node. Besides being cheaper than Ethernet, the new boxes let you spread out the cost by upgrading one node at a time, since they can still communicate with Macs that don't have a box attached.

As our LocalTalk/Ethernet tests demonstrated, FlashBox and DaynaTALK will probably be most useful on networks that frequently transfer large files. We'll have a full report in a future issue.

— John Rizzo

that's built into every Mac, the software that controls data transmission and LocalTalk cabling. LocalTalk is rather slow (230,400 bits per second), but you can replace it with faster systems such as Ethernet. LocalTalk circuitry can transmit over a variety of wiring schemes, including standard unshielded phone wire, Apple's shielded LocalTalk cables, and fiber-optic cabling.

mount — To access a volume so that it appears on your desktop as a disk icon. When you insert a floppy disk into your Mac, it's displayed on the desktop as a disk icon. When you log on to an AppleShare volume or mount a TOPS server volume, an icon likewise appears on your desktop, allowing you to work with the remote volume as if it were attached to your own computer.

network — A group of computers connected in such a fashion that they can share information.

node — A computer, printer, or other device that's connected to a network.

OSI reference model — A standard for telecommunications protocols, the Open Systems Interconnect reference model breaks up the various aspects of moving data through a network into modular tasks called layers. Each layer can be replaced by another equivalent layer (such as substituting Ethernet for LocalTalk). AppleTalk is based on the OSI reference model.

packet — The smallest unit of data that can be transmitted over a network using a given communications protocol.

publish — In TOPS, making a volume available to other users on the network.

SneakerNet — The cheapest file-sharing system. It requires the human conversion of protein to energy, rather than electronic signals, to move files from one machine to another. An international standard for low-budget operations, it has been implemented by Nike, Adidas, and several other vendors.

TOPS — A distributed file-sharing system available from Sun Microsystems. Each node on a TOPS network can publish local folders or hard disks, which can then be mounted by other users.

twisted pair — A wiring scheme consisting of two entwined wires, commonly used in phone wire or network cabling.

volume — A storage unit — a hard disk, floppy disk, or even a folder (in TOPS) — that appears to the user on the desktop as a disk icon.

— Stephan Somogyi

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read a server-resident database. The tests were repeated as we steadily increased the number of Macs on the network to a maximum of 15 (see sidebar, "Network Benchmarks").

Although Ethernet theoretically can transmit at 10 million bps, that doesn't mean that it's 40 times faster than LocalTalk in real situations. Our tests demonstrated that, at best, Ethernet is only about twice as fast as LocalTalk on a small network; the average gain was only 20 percent. This is because neither system operates at its maximum transfer rate. On either system, whenever a signal is sent out, it's broadcast everywhere over the network at velocities near the speed of light. However, if another computer transmits a message at the same time, the two signals collide and must be sent again by their respective computers. As the number of machines in use increases, so do the chances for collisions. As a result, the average network speeds are slower than the theoretical maximums.

LocalTalk was designed for small networks, and it seems well suited to its task. Our benchmark tests showed that it can handle ten nodes without degradation. At 15 nodes, overall performance was about 10 percent slower. Obviously, the more nodes you add, the slower a LocalTalk network becomes.

Ethernet, on the other hand, was designed for large networks of several hundred nodes. Our tests showed a slight

Network Benchmarks



We designed the benchmarks to simulate actual work-group conditions. The results don't represent peak traffic, such as 15 people trying to download a 1-megabyte file at the same time; instead, they reflect the average network performance for a typical work group.

The same set of benchmarks was used to test two things: communications circuitry and file servers. For our comparisons of LocalTalk and Ethernet, we used the same server (an SE running AppleShare) for all tests. When testing servers, we always used LocalTalk circuitry and AppleShare software.

Setting Up

The testing for this Labs report was conducted in *MacUser*'s new NetWorkShop. We used 15 actual Macs for all the tests, rather than simulating extra nodes on a smaller number of machines by increasing the traffic per node. Our test work group consisted of Mac Pluses, SEs, IIs, a IIx, and an SE/30, each running the latest version of the System and operating from a variety of fixed and removable hard disks and floppies. For the tests of LocalTalk and file servers, we used Farallon's PhoneNET cabling. For our Ethernet testing, we used "thin" Ethernet cabling (RG58) with BNC connectors, Ethernet cards from Dove and Kinetics for the SEs and IIs, and Kinetics' EtherSC boxes for the Pluses.

To determine the amount of traffic a typical Mac workstation generates, we monitored the traffic on *MacUser*'s office network using Farallon's TrafficWatch. The *MacUser* editorial network is a busy one, with around 40 users accessing server-resident databases, transferring files, sending E-mail, and printing to the LaserWriters. We found that about three *packets* (bursts of data) per second were generated from each Mac that was in use. However, these measurements included Macs left idle while users attended meetings and such, so we increased our test work group's traffic flow to 4.5 packets per second per Mac to ensure that we were pushing the mean.

In creating network traffic, we didn't want each node to send out a constant stream of data. That's not how people use a network. Typically users download a file from the server, then work on a file on their local hard disk, then send an E-mail message. Thus we needed to generate traffic in spurts separated by periods of inactivity. Each node needed to be on a different "spurt schedule" to add the randomness seen on real networks. Furthermore, the traffic generator needed to be a real application so the packets would be a realistic length.

To accomplish all this, we used a multiuser 4th Dimension database written especially for us by ACIUS. The database was placed on a server where it could be accessed by each node that had a copy of the 4th Dimension program. Each node was set to read the database at a different interval between 25 and 39 seconds. These numbers were adjusted to give an overall traffic rate of 4.5 packets per second per node. Just as in an actual network with real file servers, from time to time several nodes were requesting information simultaneously.

While most of the nodes were busy creating traffic, the benchmark tests were done between one node and one server. For the file-server tests, all nodes were logged on to the server being evaluated. For our comparisons of LocalTalk and Ethernet, we used two servers: One was the "real" server handling the traffic flow, and the other performed the benchmark measurements. This ensured that the tests measured only network traffic, not server traffic.

The Benchmarks

We developed four benchmark tests to represent the different types of tasks performed in a work group. All measurements were taken four times and then averaged. The results for a given test were fairly consistent and did not vary by more than two or three seconds.

Printing test. We discovered that the amount of time required for a Mac on the network to print to a laser printer mainly depended on the printer and didn't vary much under any of the conditions. Consequently we did not graph these results.

4th Dimension Read (version 1.06) test. We measured the time it took a workstation Mac to read a 4th Dimension database on the server and display a screen listing 53 records. This test was illustrative not only of multiuser databases but also of E-mail servers, which can work similarly. Some E-mail servers receive a request from a workstation (a user opening a message, for example), look through a database of E-mail messages, and send the message to the user. This task gave the servers a good workout and turned out to be more dependent on the server than on whether we used LocalTalk or Ethernet.

Excel Launch (version 1.5) test. We clocked how long it took a Mac to open Excel on the server and display an 86K (25 rows x 103 columns) spreadsheet file. This task proved to depend equally on the file server and on the network's communications circuitry.

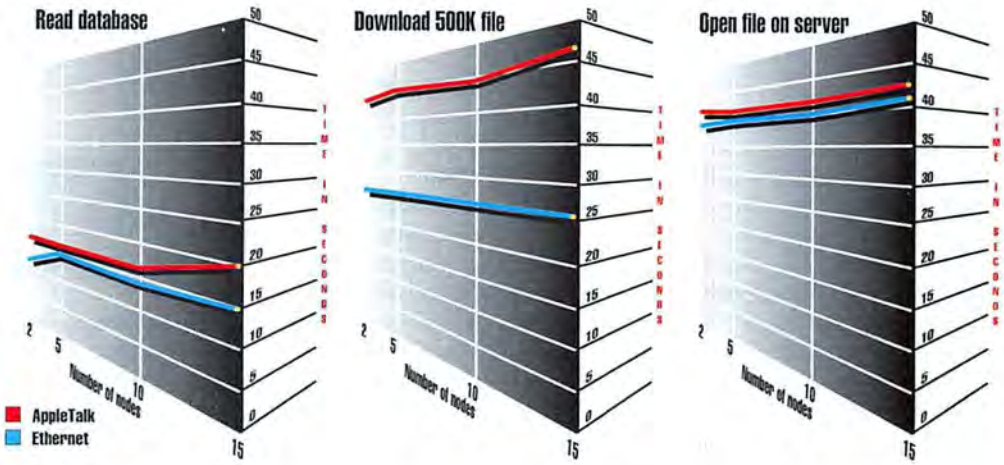
File Download test. The final test was to download a 500K PageMaker file from the server. This was the most circuitry-intensive task and the one where Ethernet proved to be the most valuable.

— John Rizzo

Figure 2: LocalTalk versus Ethernet

We compared the performance of LocalTalk and Ethernet at reading a server-resident database, downloading a 500K file, and opening a file on the server. All tests were conducted on an SE running AppleShare; for each pair, lower (less time elapsed) is better. The greatest difference between the two was for downloading a large file. If you rarely do this, you won't gain much from Ethernet, as evidenced by the other tests.

MICHAEL YAPP / MACUSER



degradation when we increased network size from 2 to 5 nodes. After that, network speeds were constant up to the 15 nodes we tested. Typically, you'd need to have several dozen nodes before you'd see degradation in Ethernet performance.

Ethernet was the clear winner in transferring large files; it cut the time to download a 500K file by about 43 percent on the average (see Figure 2). Clearly, a work group that uses its network primarily for passing large files — such as graphics, CAD, or scientific applications — would benefit greatly from Ethernet.

However, Ethernet was less helpful for other network tasks, which turned out to depend more on file-server speed. Ethernet was about 4.2 percent faster than LocalTalk when opening a spreadsheet file located on the server disk, and about 19 percent faster when reading a server-resident database. As we discuss later, the speed of these two functions was increased more by changing the Mac SE server to an SE/30 or II than by replacing LocalTalk with Ethernet.

Ethernet had no effect on the printing speed of a LaserWriter. Because a LaserWriter will run only on LocalTalk, you must have a bridge between the Ethernet card and the printer. We used Kinetics' FastPath 4 hardware bridge, which lists at $2,795, but you might want to consider Liaison, the innovative software bridge from Infosphere (Portland, Oregon), which costs only $295.

The Headless Server



An SE/30 may be the most cost-effective file server, but there are still good reasons to use a Mac II. Besides the fact that you may already own one, the II's multiple slots can come in handy if you expand your network and want to add boards for Ethernet, accelerators, or mainframe connectivity.

Unfortunately, a Mac II costs $3,000 more than an SE — a price easier to justify for a workstation than for a file server. But you can cut $1,000 off the cost of a Mac II file server by running it "headless" — sans keyboard, monitor, and video card — using Timbuktu, a desk accessory from Farallon Computing.



Timbuktu lets you remotely control a Mac and view its screen from a second Mac. If the remote Mac is functioning as a file server or an E-mail or print server, you can use Timbuktu to configure and manage the server from any Mac on the network.

Timbuktu supports large screens and works across AppleTalk zones and Ethernet/LocalTalk bridges. Remote access can be controlled through password protection. At press time, Farallon was working on a file-transfer feature that could compete with TOPS. Timbuktu's file transfers wouldn't require a file server, and unlike TOPS transfers, they would occur in the background, thus avoiding work interruptions (for more on TOPS, see "Two for the Node").

Although you must buy two copies of Timbuktu — one for the server and one for the workstation that controls it — it's still a bargain. Apple's standard keyboard, monochrome monitor, and 4-bit video card list at $1,027; one copy of Timbuktu costs $99.95. The remote version — for controlling a Mac via modem — is $295. And Timbuktu isn't memory-hungry, so you won't need to invest in extra RAM.

At press time, we heard of a similar program called Sideband, which was about to be released by Nexus Development of Queensland, Australia. Sideband costs $149 for two nodes, with remote capabilities built-in.

— John Rizzo

Servers with a Smile

OK, so upgrading the file server will boost a small network's performance more than switching to Ethernet will. But which Mac makes the best server? Using the same battery of tests, we tested the file-server performance of the Mac Plus, SE, SE/30, II, and IIx on a network of up to 15 machines. In each case, we used LocalTalk wiring and AppleShare server software.

The same hard disk, an Apple 40SC, was used for all the server tests. To ensure

that the hard disk itself wasn't affecting server performance, we conducted some tests using FWB's Hammer 300 hard disk, which has a faster access time. The results were almost identical, indicating that your choice of hard disk has little effect on file-server performance.

For a small network, our test results point unquestionably to the SE/30 as the optimum file server. If you already have a Mac II in-house, it will work just as well, but it's more expensive. However, a Mac II can be used as a server without a monitor, video card, or keyboard (see sidebar, "The Headless Server"), which reduces its cost. The Mac IIx should not be used as a file server; its performance was only marginally better than that of a II or SE/30, but it costs $1,800 more than a Mac II.

On a network with 15 nodes, the SE/30 cut the time it took another Mac to read a server-resident database by 60 percent over a Plus, and by 50 percent over an SE (see Figure 3). This Database Read test is important because it's similar to how some E-mail systems work and therefore indicates how some database-based E-mail servers might perform.

The performance of an SE/30 or Mac II server was also less affected than that of the Plus or SE by the addition of more workstations. Overall, server performance for the Plus and SE slowed about 10 percent when the network was increased from 2 to 15 nodes, while an SE/30 or Mac II server was slowed by only 1 to 2 percent. When downloading a 500K file, an SE/30 or II server was slowed by about 5 percent when the network grew from 2 to 15 nodes, while the performance of the Plus and SE were slowed by 11 and 8 percent, respectively.

The PC Blues

If you've recently replaced your IBM PC/AT with a Mac, you might be wondering whether you can use the cheaper PC as an AppleShare file server. The answer is yes — you can purchase the necessary board and software — but we wouldn't recommend it. We tested the FS100 PC File Server from DayStar Digital on the Compaq DeskPro 286, a popular AT clone. This setup produced a server interface that looked exactly like AppleShare to a Mac user, but the server's performance was far below that of even a Mac Plus.

The FS100 server was nearly twice as slow as a Mac II on a network with ten nodes, and 36 percent slower than a Mac Plus. The PC setup was four times slower at the Database Read test than a Mac II, and it was almost twice as slow as a Plus. Using an IBM PC XT as an AppleShare server would produce even worse results.

Even worse, the FS100 server crashed whenever we tried to do anything with 14 Macs logged on to it. DayStar said that the server should support up to 30 nodes — if you add an extra line of information to the PC's Autoexec.bat file. This information wasn't in the manual at press time, although DayStar plans to include it in the next revision. However, the company said the extra line wouldn't improve the server's speed.

Who Needs Memory?



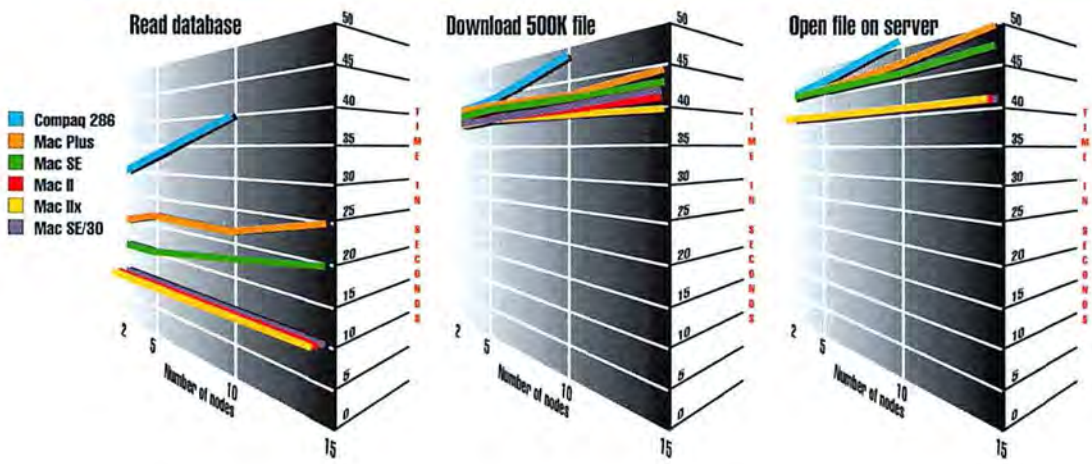
Finally, how much RAM should your file server have? As little as you can get away with. We found little difference in performance between 1 and 5 megabytes of RAM. AppleShare gets along fine with 1 megabyte; however, if you plan to run it concurrently with a spooler or E-mail, we recommend at least 2 megabytes.

Choose Your Partner

Overall, except for copying large files, a faster Mac-based file server does more to improve network speed than does adding Ethernet. And for a 15-node network, upgrading a file server is cheaper. An SE/30 lists for $4,998, which is less than $350 per node. Ethernet, on the other hand, costs more than $500 per node. So consider Ethernet only if you frequently transfer large files between workstations. Our recommendation: upgrade your file server to an SE/30. It's the best way to make your small net work faster.

John Rizzo is *MacUser*'s technical editor. He's a proud owner of one of the first 128K Macs.

Figure 3: File Server Benchmarks



As file servers, the five Macs and a PC finished in the same order on every test. The best (and nearly identical) performances were those of the SE/30, II, and IIx. Reading a server-resident database was the most server-intensive task, and even then the IIx performed no faster than the II or SE/30. The PC server wouldn't work at all with 15 nodes.

MICHAEL YAPP / MACUSER

Two for the Node

By Henry Bortman

So you've decided you need a file server, but you're short on cash. You've heard about TOPS and AppleShare, but you don't really understand the difference. How do you choose? In our trial run of *MacUser*'s new NetWorkShop, we gave both programs a workout so we could help you answer precisely that question.

A Question of Dedication

File-server systems can be either *dedicated* or *distributed* (see Figure 4). Apple's AppleShare is a dedicated-server system. When a Mac is used as an AppleShare server, no one can use that machine to do any other work. You can run some applications — the AppleShare Print Server, a mail server, or dial-in access software — concurrently with AppleShare, and you still have access to DAs. But the Finder is nowhere to be found.

In a dedicated-server system, all file sharing occurs between a workstation and the dedicated server. User A can't send a file directly to user B. Instead, A must copy the file to the server, and then B must copy it from the server.

With distributed-server systems, such as Sun's TOPS, shared files are distributed around the network. Any workstation can be both a *server* (sharing its files with others on the network) and a *client* (accessing files that other users have made available).

As a result, user A can send a file directly to user B. Moreover, you can continue to use a Mac acting as a TOPS server for word processing, spreadsheet number crunching, graphics, and so on.

Actually, TOPS can be used in either distributed or dedicated mode. To make a TOPS server dedicated, you just don't use the machine to do anything else. You can even have the best of both worlds — storing on a dedicated server those frequently used files that everyone needs to share, while maintaining the ability of users to share other files directly between workstations.

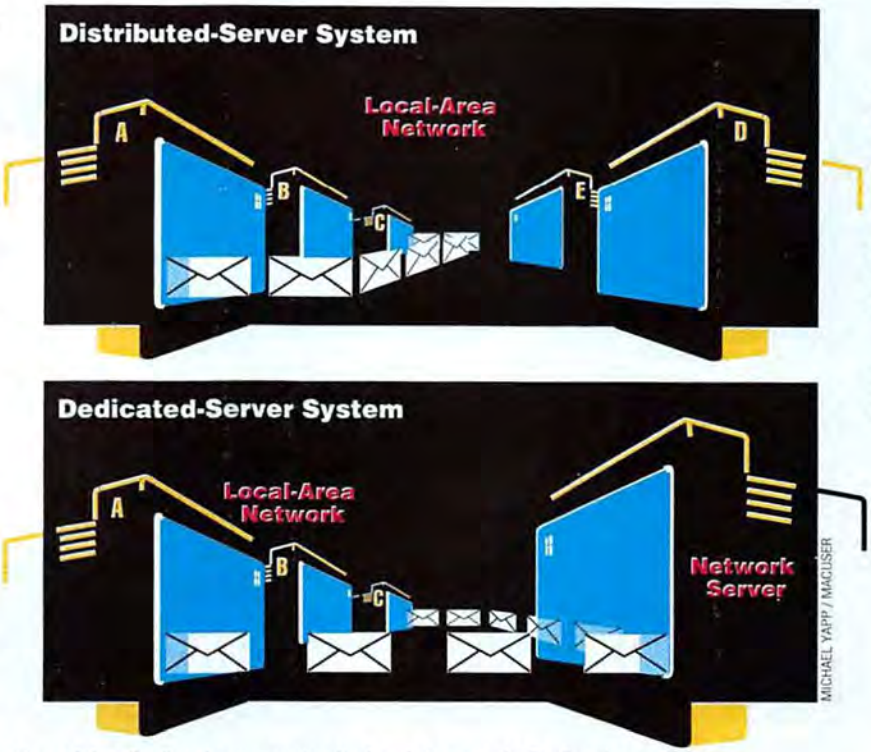


Figure 4: In a distributed-server system (top), node A can send a file directly to node C. In a dedicated-server system (bottom), A must send it to the server first, and then C must copy it.

What's the Protocol?

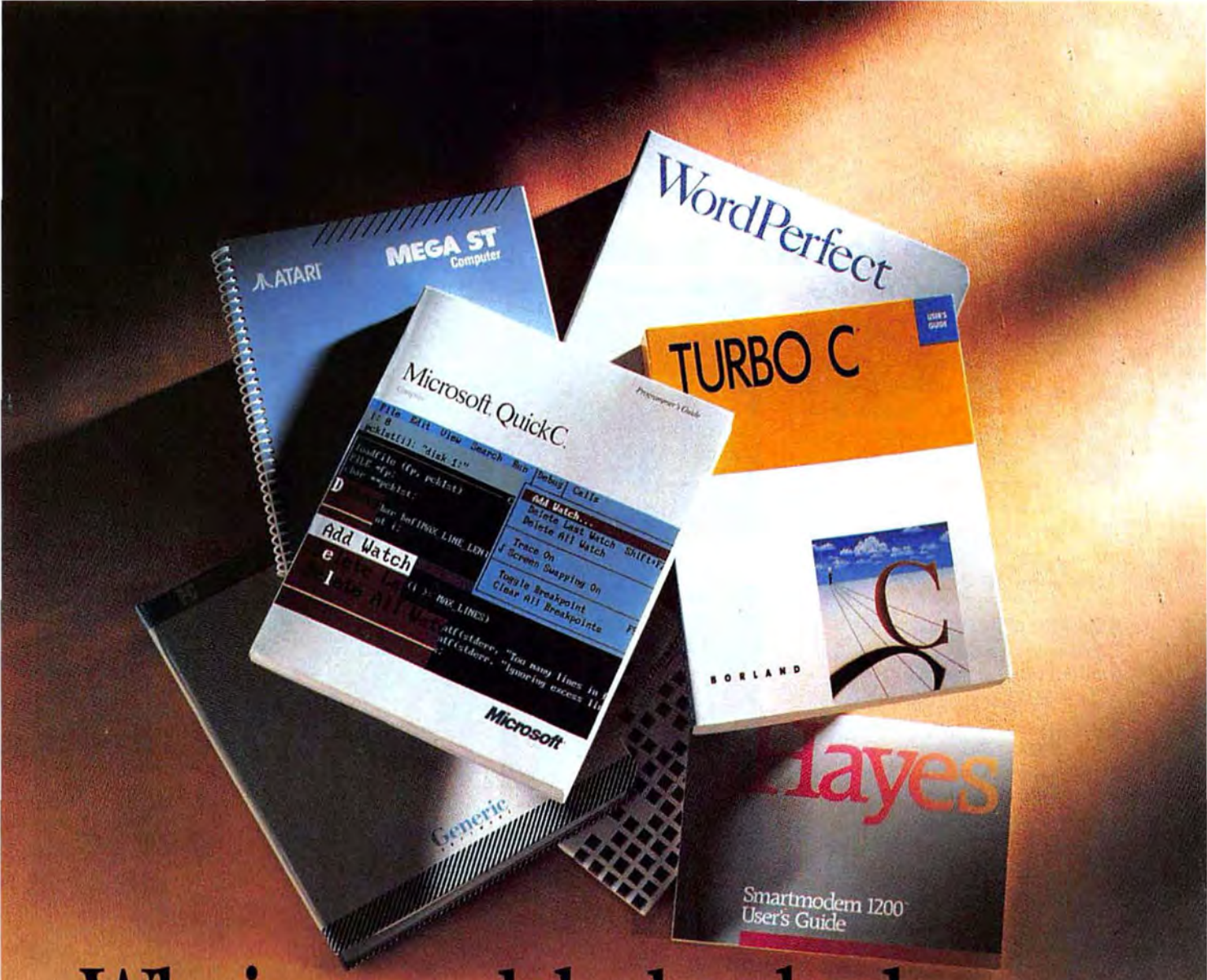
AppleShare wasn't the first file-server software available for Macintosh computers — TOPS actually shipped earlier — but it set an important standard for the computer industry. AppleShare is based on the AppleTalk Filing Protocol (AFP), which defines the rules by which workstations share files on a server (for more on AFP, see "Following Protocol" in this issue). AFP controls who can log on to the server; who can access folders; and, in the case of multiuser applications, who can read and write specific segments of a file (such as the records in a database).

Apple would like everyone who implements file-server systems to follow the AFP guidelines. Novell, 3Com, and several other network vendors have either implemented AFP-compliant versions of their servers or have promised to. Sun hasn't, and it isn't making any promises. Instead, TOPS uses TOPS Filing Protocol.

However, this doesn't mean that TOPS and AppleShare are incompatible. A Mac can be simultaneously an AppleShare client and a TOPS server/client, and many people use them in tandem. For single-user applications, the major effect of TOPS' failure to comply with AFP is that you can't mount TOPS volumes from the Chooser. Instead, you must use the TOPS desk accessory.

With multiuser applications, the problems increase. TOPS doesn't support the file- and record-locking calls defined by Apple as part of AFP. These ensure that two users can't change the same data at the same time. Developers must choose between not supporting TOPS at all — for instance, the initial release of multiuser FoxBASE+/Mac, from Fox Software, won't work on a TOPS network — or writing custom code. TOPS can also cause ACIUS' 4th Dimension to get confused about file location.

Sun is aware of these problems and has said that they will be fixed in the 2.2 release of TOPS, expected later this year. Still, we suspect that as AFP develops in the future, new incompatibilities will arise.



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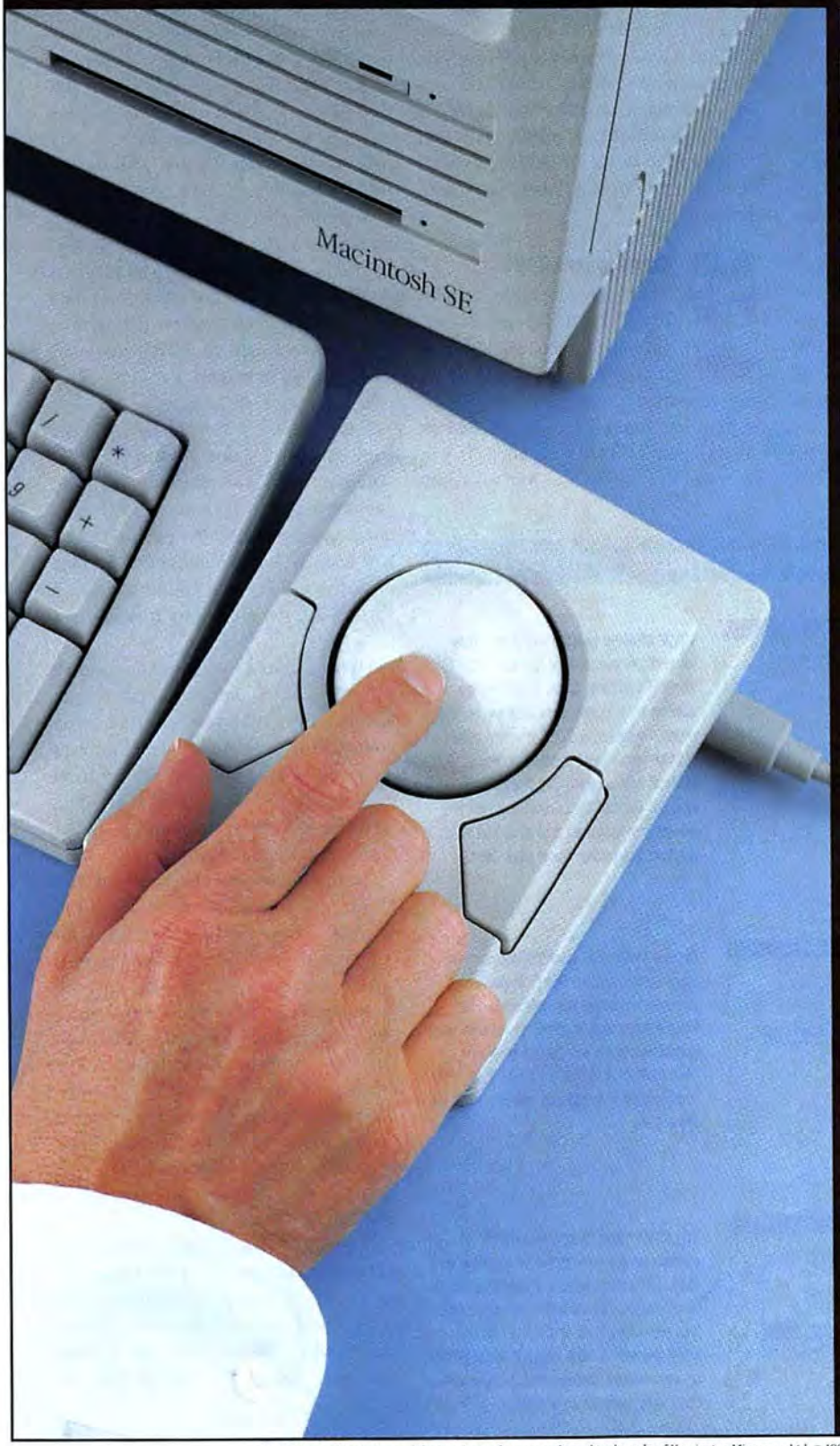
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We would like to see Apple and Sun work together to resolve whatever technical problems exist, since everyone would benefit from an AFP-compliant TOPS.

Accessing AppleShare

Users access AppleShare file servers with AppleShare client software. Beginning with System 6.0, it comes on Utilities Disk 1 of the System software. After installation, you use the Chooser to log on to and access, or *mount*, any AppleShare server — actually, any AFP server — on your desktop. This is one of the beauties of AFP: you never need to know whether the server you're accessing is really AppleShare, AlisaShare (on VAXs), uShare (UNIX machines), or NetWare (the PC world). Everything is transparent.

More than one disk *volume* can be attached to a single server, and you can elect to mount any or all of them. You can also set up the system so that these volumes are mounted automatically each time you boot up your Mac. But there is a caveat. The number of users who can log on to a server simultaneously depends on your hardware platform. If you are running AppleShare on a Mac with at least 2 megabytes of RAM and a 68020 or 68030 chip (the Mac II, IIx, or SE/30), up to 50 users can get on at once. Otherwise, you're limited to 25.



Turning on TOPS

TOPS comes with its own Installer, which places 11 new files in your System folder — if it works. We consistently crashed while trying to install TOPS 2.1 on Mac IIs, unless they already had an older version of TOPS installed. If you encounter this problem — Sun says only a small number of copies got out that way — call Sun Microsystems' TOPS Division for a free upgrade. There's also a workaround: Copy all the TOPS files to your System folder manually; then install the TOPS DA with Font/DA Mover.

The TOPS DA is the door into TOPS (see Figure 5). From it, you can *publish* — make available to other users — any disk or disks attached to your Mac, or any folders your local disks contain. Each disk or folder becomes a "server" that can be accessed by other TOPS users from their Macs. (You can even publish an AppleShare volume as a TOPS server.) By using a special Options dialog box, you can elect to have TOPS automatically publish or mount a volume every time you boot your Mac.

From the DA, TOPS clients can either copy files or mount published server volumes. TOPS' Copy function is a quick and convenient way to move a file from one node to another. It's one of TOPS' best features, and it highlights the power of distributed servers. Unfortunately, in version 2.1 you must copy files one at a time.

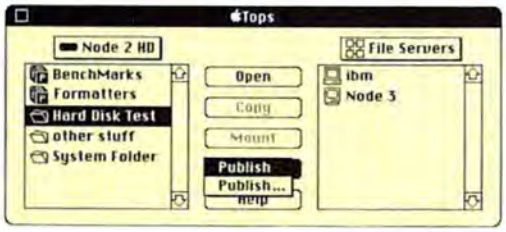
If you want to do more than just a quick copy, you can mount a published volume, which causes it to appear as a disk icon on your desktop. Note that when one user publishes several different folders from the same hard disk, each as a separate server, clients must mount each folder/server as a separate volume.

This has advantages and disadvantages. On the plus side, it allows each user to be selective about what he or she shares with others on the network. But you can also get some very strange results. Say, for example, you publish two folders as servers, someone else mounts them, and you later drag one folder inside the other. The dragged folder will appear twice on the client workstation — once as a mounted volume in its own right and a second time as a folder within another volume.

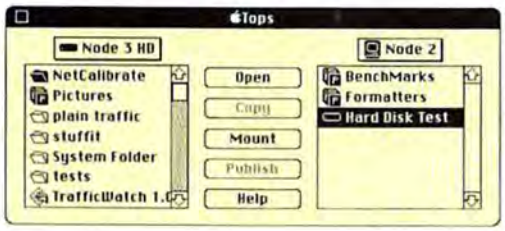
Housekeeping

AppleShare requires not only that you dedicate a Mac as a server but also that you dedicate a human (or two or three) as system administrator. Actually, unlike a Mac running AppleShare, the administrator(s) *can* do other things. But ad-

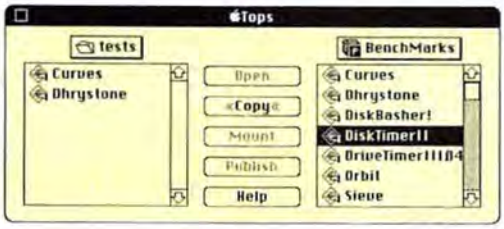
Figure 5: Publishing and Mounting a TOPS Volume



TOPS' control center is its DA. Your local disks appear on the left; TOPS server volumes made available by others on the network appear on the right. To share a TOPS server volume, a user must first publish it. Here, Node 2 has already published the folders BenchMarks and Formatters as server volumes and is about to publish the folder Hard Disk Test.



Once a volume is published, another user can mount it. Here, Node 3 has already mounted BenchMarks and Formatters and is about to mount Hard Disk Test. Note that although Hard Disk Test is a folder on Node 2, it appears as a separate volume with its own icon.



You don't need to mount a TOPS volume on your desktop to access its files. TOPS also offers a quick-copy function, one of its best features, that lets you copy files from any published TOPS server to one of your local disks or vice versa. Unfortunately, you can copy only one file at a time.

Figure 6: AppleShare Privileges



AppleShare's access privileges control who has access to what files and folders on a server. When AppleShare is installed in your system, selecting Get Privileges from the File menu brings up this dialog box.

ministrators are responsible for initializing the server, registering users and their passwords, creating groups, adding and naming volumes, making backups, and so on. Most of this work is done through the Admin program while the server is up and running.

TOPS ostensibly has no such requirement. That's one of its selling points. But a TOPS network also can have problems. When workstations are used as servers, a System crash — I crash my machine daily, sometimes hourly — or a machine that gets inadvertently turned off can spell disaster for other users on the network if they are accessing its published volumes. This is less likely to occur with a dedicated server.

Of course, you can dedicate a machine as a TOPS server. But then someone has to set passwords, do backups, and be in charge of what folders or disks get published to the network. Sounds like a job for a system administrator, doesn't it?

Except for very small networks, you're likely to need some planning and management whether you use TOPS or AppleShare. With AppleShare, it's built in. With TOPS, if you're wise, you won't need to learn the hard way.

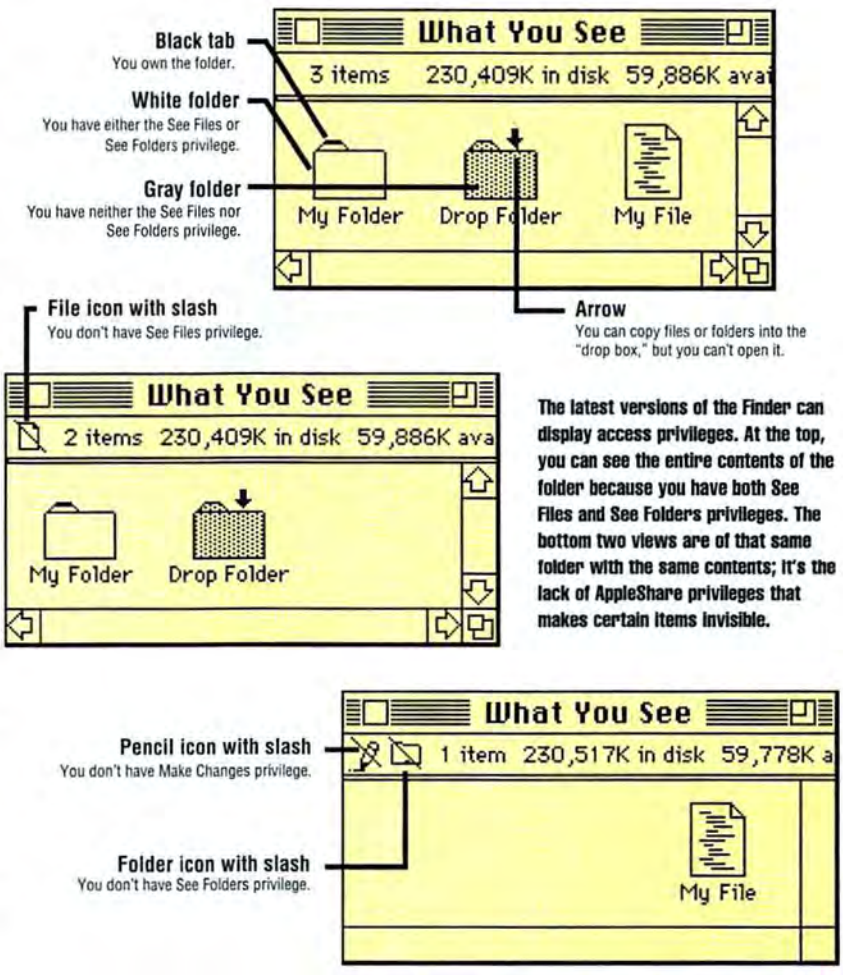
Privileged Security

When you begin sharing files on a network, you must consider the problem of restricting unauthorized access to those files. AFP provides a complex set of protections — relative to TOPS — that restricts users' access to folders (that's folders, not files!) on a server volume. These access privileges fall into two categories: who gets access and what kind of access they get (see Figure 6).

The answer to "Who gets access?" determines whether a particular folder can be accessed only by its Owner, by a Group, or by Everyone. A folder's Owner is initially the person who creates it, although ownership can be reassigned with the Access Privileges dialog box. *Group* refers to a list of users whose IDs have been associated. At *MacUser*, for example, we have a production group, an edit group, a technical group, and so on. Everyone in a particular group can share a folder, while access is restricted for those outside the group. Each user can belong to multiple groups, but a folder can be assigned to only one group at a time. Lastly, choosing Everyone means what you'd expect — no restrictions on who can access the folder.

The answer to "What kind of access privileges?" determines your level of access to a folder and is decided by the folder's owner. Your choices are See Folders, See Files, and Make Changes (see Figure 7). The first two are self-explanatory. Make Changes, however, is something of a misnomer. You can make changes only to the folder itself, not to the

Figure 7: AppleShare Security



The latest versions of the Finder can display access privileges. At the top, you can see the entire contents of the folder because you have both See Files and See Folders privileges. The bottom two views are of that same folder with the same contents; it's the lack of AppleShare privileges that makes certain items invisible.

files it contains. Thus, if you don't also have either See Files or See Folders privileges, all you can do is drop files into the folder. After that, you can't even retrieve them, let alone edit them. This is precisely the idea; Apple calls such folders *drop boxes*.

Even worse, you can change the name of a folder even if you don't have any access privileges. This oversight has the potential to undo all the benefits provided by the rest of AppleShare's network security system.

Deadly Default

But there's a more disturbing problem with AppleShare's access privileges. Every time you create a folder on the server, it defaults to owner-only privileges. Say you create a folder and forget to turn on access for Group or Everyone. If you then place it inside someone else's folder, for which you have only the Make Changes privilege, it's black-hole time. The owner of the other folder can't open your folder, and you can't retrieve it to change the privileges.

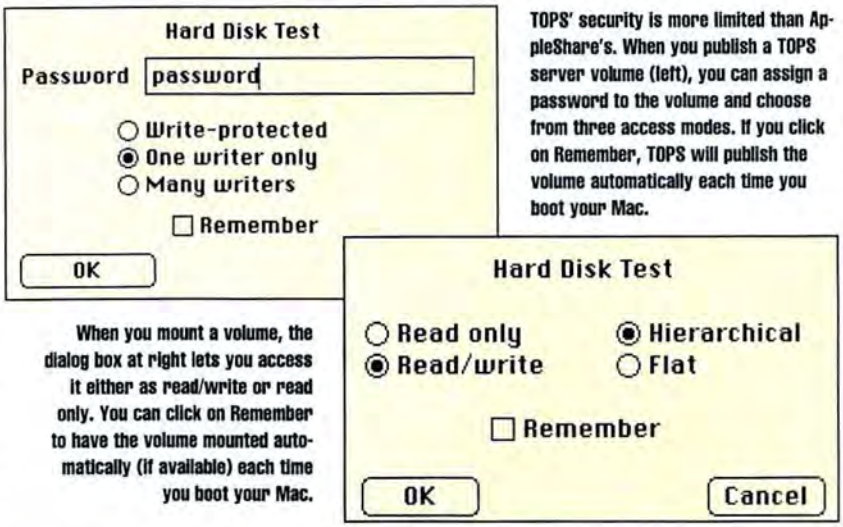
This same deadly default occurs when you copy a folder from a local hard disk (where privileges don't exist) onto an AppleShare server. You can't copy the folder directly to someone else's protected folder on the server. You must first move the folder from your hard disk to the server's desktop, change the privileges, and then drop it into the appropriate folder.

The only way out is to have the recipient of the underprivileged folder (or the system administrator) move it back out to the server desktop or into a folder that you can access so that you can modify its privileges.

Apple provides no way to set less intrusive default privileges. Fortunately, CE Software (West Des Moines, Iowa) does. The currently shipping version of MockPackage ($49.95) includes an INIT called FolderShare, which performs this much-needed function for AppleShare users.

Despite these problems, AppleShare offers a reasonable set of options for sharing files while restricting the uninvited, and it should appeal to many corporate buyers.

Figure 8: TOPS Security



TOPS' security is more limited than AppleShare's. When you publish a TOPS server volume (left), you can assign a password to the volume and choose from three access modes. If you click on Remember, TOPS will publish the volume automatically each time you boot your Mac.

When you mount a volume, the dialog box at right lets you access it either as read/write or read only. You can click on Remember to have the volume mounted automatically (if available) each time you boot your Mac.

TOPSecurity

The security system for TOPS is not as extensive, but you may find it adequate (see Figure 8). Users can restrict access to their private data by publishing only selected folders. In addition, TOPS offers password protection on a per-server (as opposed to AppleShare's per-client) basis. If you enter a password when you publish a disk or folder, another user will need to enter the same password to copy files or mount it. TOPS has no owners or groups, nor are there different kinds of folder access. Passwords are all you get

The UNIX Touch



Does your work environment include a UNIX machine? If so, you might consider using it as an AppleShare server. Information Presentation Technologies (IPT) markets uShare, an AppleShare-compatible server running under UNIX. The uShare server has a complete implementation of the AppleTalk Filing Protocol (AFP) and, for Mac users of the network, is indistinguishable from a Macintosh acting as an AppleShare server.

Since the server runs under the multitasking UNIX operating system, a dedicated machine is not required. What's more, uShare provides services beyond those available under AppleShare. These include electronic mail, print spooling, virtual disks, automatic backup, the ability to copy files to and from the UNIX file system, and integration of Macs into UNIX networks. Electronic mail is accessed by means of a DA that furnishes a Mac interface to the reliable UNIX mail system. With uShare, any user can create a private *virtual disk*, which is like having your own hard disk within the server. The virtual disk can even contain a System folder, allowing you to run your Mac diskless, and virtual disks can take advantage of the automatic backup facility. uShare works with both Ethernet and LocalTalk. Additionally, it can translate between AFP and UNIX's Internet Protocols, effectively integrating Macs into larger UNIX networks.

At press time, uShare was available for Apollo and Sun workstations, with prices starting at $1,195. IPT also plans to port uShare to other UNIX platforms. Extremely powerful UNIX workstations — some more than five times faster than the Mac IIx, such as those using the MIPS RISC chip — should soon be available in the $10,000 price range. Such a machine would be competitively priced against a Mac IIx and should make one barnburner of a uShare server.

IPT is also working to give individual Macs the ability to publish files on the network, a feature found in TOPS but currently unavailable with AppleShare. uShare may have that capability by the time you read this.

— James Finn

for security. It's limited but easy.

The folks at TOPS made a little boo-boo in this department too. Even if you enter a password when you publish a folder or disk, anyone can walk up to your machine and unpublish it without having to enter the password. This makes it a cinch for someone with malicious intent to wreak havoc when no one's looking.

Peak Performance

We put AppleShare (version 2.0.1) and TOPS (version 2.1) through their paces using the same set of benchmarks that we developed for testing LocalTalk, Ethernet, and file-server hardware (see sidebar, "Network Benchmarks"). AppleShare outperformed TOPS at reading a 4th Dimension database and copying a 500K file, and it ran neck and neck when it came to launching an Excel file (see Figure 9). Increasing the number of nodes had no significant effect on the performance of either product.

Why did TOPS fall behind in the File Copy and the Database Read tests? Here's what the TOPS engineers said. Regarding the 500K File Copy test, Version 2.1 was shipped with a buffer set at too low a value, degrading performance on large data transfers. This will be fixed in version 2.1.1 (a free upgrade). As for the Database Read test: AppleShare automatically sets a RAM cache; TOPS doesn't. AppleShare may have cached in memory some of the database records that TOPS had to read from disk each time it accessed the data. You can manually turn on a cache for a TOPS server from the Control Panel — in fact, it's recommended, although we could find nothing about it in the manual. We tested with no cache.

We tested TOPS both in distributed and in dedicated modes. The difference was that in the distributed mode someone was typing at 80 wpm on the workstation being used as a server, while in the dedicated mode there was no other user activity. In some cases, TOPS actually performed better with typing than without. This may be because when we were typing, we were running a word processor. When we weren't typing (dedicated mode), we were in the Finder. Apparently, the Finder is a poor program for TOPS to run behind. The TOPS folks suggest that if you are going to dedicate a node as a TOPS server, then you should leave the TOPS DA open.

TOPS does have one critical performance issue that the test results don't show — the degradation of other user activity, such as typing or even moving the mouse. Making small data requests of a TOPS server has little effect, but copying large files causes things to grind to a halt. This is the most unsavory aspect of TOPS. A development effort to find a way to make it truly operate in the background would be time well spent.

Casting a Wider Net

Both TOPS and AppleShare support multivendor environments. TOPS is available as client/server software on both Macs and PCs, and it will work over either LocalTalk or Ethernet on both platforms. There is also a server-only version available from Sun for its UNIX machines, and other vendors provide UNIX implementations of TOPS for Berkeley UNIX and A/UX. In addition, Pacer has announced plans to implement a TOPS server for VMS (an operating system used by DEC's VAXs).

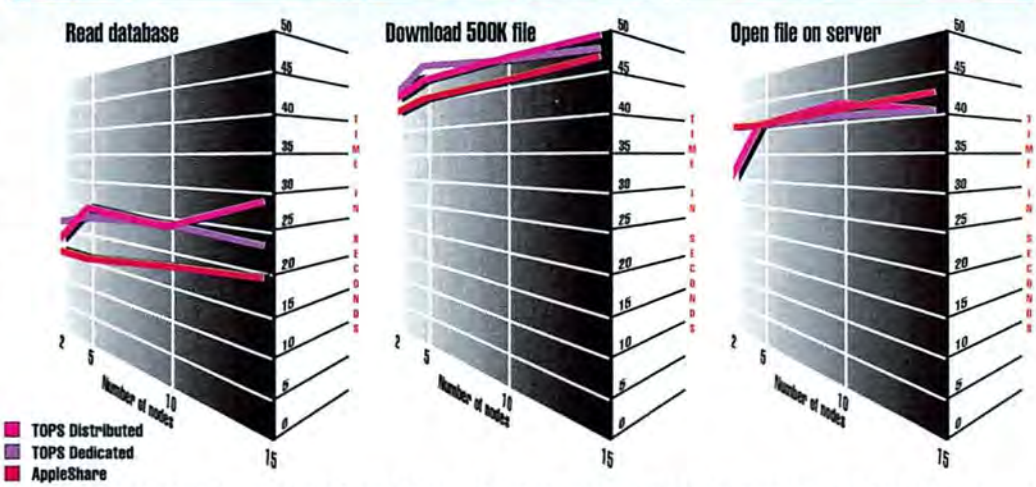
AppleShare is also available for both Macs and PCs. Apple provides non-Mac client software only for DOS machines, and it works only with LocalTalk, not with Ethernet. Third-party vendors have implemented DOS-based AFP servers, but they're very slow; both Alisa and Pacer have implemented AFP servers for VMS; and IPT sells AFP-compliant uShare for UNIX platforms (see sidebar, "The UNIX Touch"). Novell has also built AFP compatibility into version 2.15 of NetWare but, again, only in the server mode.

Print Spooling

The AppleShare Print Server (a separate product) runs on the AppleShare server. When you spool a file to the Print Server, how long it takes to regain control of your screen depends on how long it takes your job to make it across the network. Once you spool a job, you can't cancel it from your machine (unless you have Timbuktu), because the queue can be managed only from the server.

TOPS Spool (included with each copy of TOPS) spools to your local disk, giving you local control over your personal print queue. With local spoolers, screen

Figure 9: Performance of AppleShare versus TOPS



MICHAEL YAPP / MACUSER

AppleShare was the clear winner when it came to reading a 4th Dimension database and copying a 500K file, but TOPS performed slightly better than AppleShare at opening an Excel file. In each case, a lower value — less time elapsed — is better.



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control returns more quickly, but your work may get interrupted later when the spooler sends the job to the printer. However, although this effect is very noticeable with Print Monitor and SuperLaserSpool, we found the disruption caused by TOPS Spool to be negligible.

The Bottom Line

AppleShare costs $799 per *server*, and there's no per-node charge for the other Macs on the network. TOPS, on the other hand, costs $249 per *node*, which adds up quickly. Thus, AppleShare may seem like a real bargain — but it's not cheap (see Figure 10). To get started with AppleShare in a typical configuration, you're looking at close to $4,000 — the cost of a Mac Plus, a 40-megabyte hard disk, and AppleShare software. And the print-spooling software ($299) and user manuals ($129 for a five-pack — you get only one manual with the AppleShare disks) cost extra; they're included with TOPS.

Jasmine's DirectServe, due in March, promises to reduce the entry cost of AFP by 30 to 40 percent, but it's still big bucks (see sidebar, "Shoestring Server"). And our recommended server configuration, an SE/30 with AppleShare, will set you back $6,000. For that price, you could equip 20 Macs with TOPS. But if you had a 20-node network, odds are that you would be taking a hard look at dedicating one of your TOPS nodes as a server. This brings the cost of TOPS and AppleShare pretty close together.

Who's on First?

TOPS outsells AppleShare by a wide margin. It's cheap and easy, and it works equally well on Macs and PCs. You can buy the software off the shelf, install it in your System folder, and go. No boards or server hardware are required. If you have a small network, small files, and a small budget, use TOPS. If the ability to move files directly between workstations is important, TOPS again.

If, on the other hand, most of your shared data resides on one node, you're copying large files, or you have more than ten nodes, think about dedicating a server. Then the decision to use TOPS or AppleShare depends on your applications, your network environment, and your security and management needs.

Obviously, if you're using software that doesn't support TOPS, such as FoxBASE+/Mac, you must go with AppleShare. And choose AppleShare if you're concerned about future AFP-compatibility issues.

If you want to run Ethernet on a mixed network of Macs and PCs, you'll want TOPS. If you're tied into a larger network that contains AlisaShare, PacerShare, or NetWare servers but you still want a local server, and if the consistency of the Chooser interface is important to you, AppleShare will provide it; TOPS won't.

AppleShare also provides better security. The importance of this will probably grow with the size of your network, and for corporate buyers this may be the deciding factor.

If you can justify it and afford it, use both. Each system has its advantages, and together they make a powerful team. Analyze your present and future needs, talk to people who have used the systems, and then decide.

Senior Technical Writer Henry Bortman needs a file server just to handle the network in his own office.

Shoestring Server



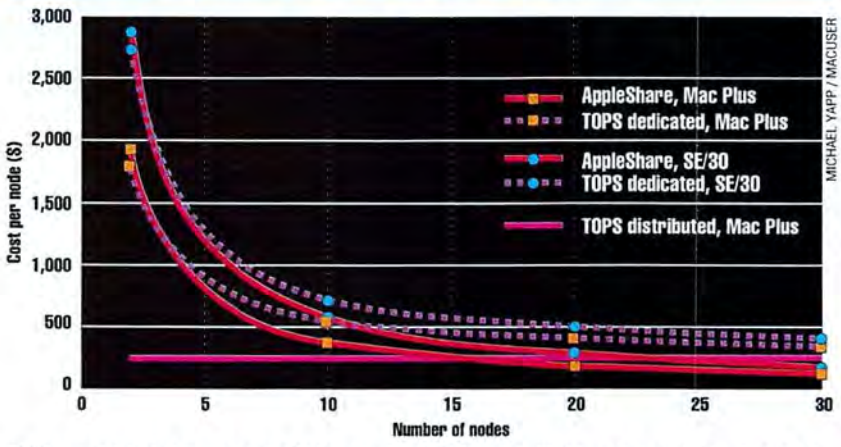
If the cost per node of AppleShare or TOPS is too high for your pocketbook, take a look at Jasmine's new DirectServe, which is scheduled to ship in April. This dedicated, AFP-compliant server doesn't require a dedicated Mac and costs a mere $1,299 — just half the price of a Mac Plus with AppleShare. Its only requirement is an external hard disk.

DirectServe consists of a stand-alone, external box with a 68010 chip, 1 megabyte of RAM (expandable to 4 megabytes), and built-in server software. From a user's standpoint, it looks identical to an AppleShare server running on a Mac. The software lets you manage DirectServe remotely — including changing user privileges, resetting the internal clock, and defining groups — from any Mac on the network. If Apple changes AFP in any way, Jasmine plans to ship an upgrade disk that, in conjunction with the installation software, will make upgrading a snap.

We looked briefly at a beta unit, which seemed to work well; we'll have complete test results in a future issue. If it performs as promised, DirectServe could be an excellent choice for the network on a budget.

— Stephan Somogyi

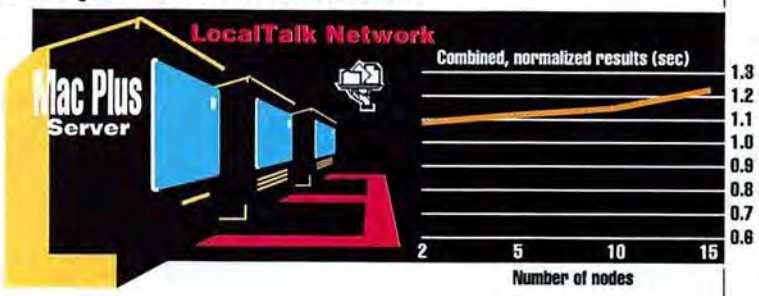
Figure 10: AppleShare versus TOPS, Cost per Node



TOPS as a distributed server costs $249 per node. AppleShare is initially more expensive, owing to the hardware investment, but it breaks even with distributed TOPS at around 15 nodes when a Mac Plus is used as a server, and at about 23 nodes with an SE/30 server. As dedicated servers, AppleShare and TOPS break even at about three nodes; AppleShare actually costs less per node than dedicated TOPS on larger networks.

Testers' Choice

Inexpensive Alternative



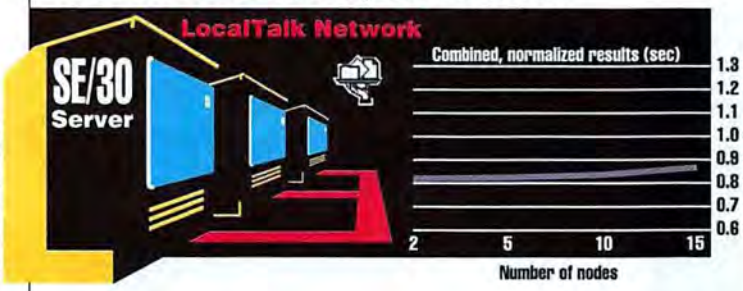
If you want to improve network performance for a work group of 15 Macs or fewer, upgrade your file server instead of spending money on a speedy LocalTalk alternative such as Ethernet. The SE/30, Mac II, and Mac IIx are all comparable file servers, but an **SE/30** is by far the cheapest. With a 40-megabyte hard disk, it's only $500 more than a regular 40-megabyte SE (that's $4,998 versus $4,498). Although it wasn't available at press time, the new Mac IIcx should also perform well as a server. Plus it has more slots than an SE/30 and should be much cheaper than a II or IIx.

If you do decide on a Mac II or IIx, you can reduce the cost significantly by using Farallon's **Timbuktu** to access it remotely, thereby avoiding the expense of a keyboard, monitor, and video card (see sidebar, "The Headless Server"). This adds a measure of security as well.

One or two megabytes of RAM is all that's necessary in an AppleShare server, unless you're loading lots of other network applications (such as E-mail and spoolers) on the same machine.

If you have a small network (not more than 15 nodes) and are performing normal office functions — using E-mail, accessing a multiuser database, or transferring average-sized files (less than 200K) — the Mac's built-in LocalTalk circuitry should satisfy your needs. The additional speed of Ethernet probably isn't worth the cost. The smaller your network, and the smaller the chunks of data (or files) you are transferring over the network, the less value Ethernet adds.

Normal Work-Group Alternative



MICHAEL YAPP / MACUSER

However, if your work group is focused on large-scale operations such as CAD or 24-bit color imaging and you use the network mainly to pass around big files of 500 megabytes or more, **Ethernet** is a good investment, even if you have only a few nodes. But even if you opt for Ethernet, we still recommend an SE/30 as a file server.

The cheapest AppleShare file server is an IBM PC equipped with a LocalTalk board and AFP software such as that from DayStar, but it's also the slowest and poorest performer. A Mac Plus is a far superior server for the budget-minded, and it's much easier to set up too. But keep an eye out for Jasmine's new **DirectServe.** At $1,299 with AppleShare built-in, it's $1,300 cheaper than a Mac Plus/AppleShare combination (see sidebar, "Shoestring Server").

TOPS, the distributed file-sharing system, is a cost-effective alternative to AppleShare for small networks, especially if you're mixing Macintoshes and PCs. In fact, if your network has only five or so nodes, TOPS is probably a much better choice, unless you're working with large files. You don't have to dedicate a Mac as a server, and it's a plug-and-play product that's relatively simple to set up. In addition, for the price of an SE/30 and AppleShare software, you can buy 23 nodes' worth of TOPS, although you may not want to run it on a network that big.

Analyze the nature of your file sharing carefully before installing TOPS, especially on a large network. If you publish folders on your hard disk for use by others, your work will be interrupted each time someone uses them. If only a small amount of data is accessed, the interruption is negligible. If it's a 500K file, however, you'll have to stop working until the file transfer is completed.

If you're running certain multiuser databases, TOPS may work fine even with a large number of nodes, because only small chunks of data are transferred. On the other hand, if you constantly access large files stored on the hard disk of one workstation, you'd do better to dedicate that node as a TOPS server. And if you're going to dedicate a single node as a server, you might want to reconsider AppleShare.

Finally, **AppleShare** plays by Apple's rules. It's AFP-compliant; TOPS isn't, and this can affect your choice of software. If you plan to use a multiuser application on a TOPS network, check with the vendor first to see if it supports TOPS and if there are any known problems. And consider the security issues — AppleShare's protection scheme is more extensive than that provided by TOPS.

Kudos

MacUser Labs would like to thank ACIUS, Inc., for writing the 4th Dimension database used to simulate network traffic. We are also indebted to Farallon Computing, Dove Computer, and Kinetics for loaning networking hardware.



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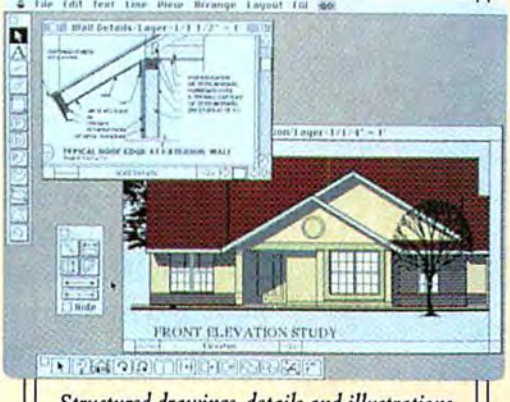


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DTP

■ Edited by
Aileen Abernathy and
Salvatore Parascandolo

This month, desktop-publishing gurus Tony Bove and Cheryl Rhodes explain how to incorporate complex graphics into page-layout programs. Read all about it in Fine Print. Then turn to "Font Follows Function" for a tutorial on typeface selection. We also have news from the Macworld Expo, and Desktop Reviews of LetraStudio, Springboard Publisher, and FONTastic Plus 2.0.

Contents

Fine Print 179
Desktop Reviews 183
Font Follows Function 191

If you have a few tricks of the trade to share, send 'em to DTP, c/o *MacUser*, 950 Tower Lane, 18th floor, Foster City, CA 94404.

BETWEEN THE LINES

Bitstream Breaks the Code

Shock waves are still rippling through the PostScript community from Bitstream's announcement that it has cracked Adobe's font-encryption scheme. All Adobe fonts are encrypted, allowing them to be read only by Adobe PostScript controllers. PostScript clone fonts such as Bitstream's can be used in PostScript printers, but they aren't processed in quite the same way and generally don't provide the same quality of output.

Bitstream's breakthrough means it will be able to produce fonts that can be processed by PostScript printers as if they were the real McCoy. Wasting no time, the company is converting its entire typeface library for use with PostScript typesetters. The fonts can also be used with PostScript-clone typesetters and 300-dot-per-inch (dpi) laser printers, meaning a user will need only one set of Bitstream typefaces for use with a wide variety of printers.

Bitstream plans to release more than 1,000 fonts by mid-1989, including many not currently available from Adobe. Pricing is $50 per font with a minimum purchase of four. Contact Bitstream at Athenaeum House, 215 First St., Cambridge, MA 02142; (617) 497-6222.

Bitstream also appears to be only one step away from figuring out Adobe's "hint" mechanism, which gives Adobe fonts their superior appearance at small sizes and low resolutions. If it can breach this final barrier between Adobe and its competitors, Bitstream will at last be on equal footing with the ruler of the PostScript universe.

■ **Aileen Abernathy**

Extending PageMaker

After lagging behind in the rapidly evolving color DTP market, PageMaker is catching up with the competition. A new Color Extension for version 3.0 lets users create color objects and import color Encapsulated PostScript Format (EPSF) and TIFF files. You'll be able to use Pantone colors and to include color specifications in PageMaker's style sheets. The extension supports color PostScript printers like the QMS ColorScript 100 and is compatible with Apple's 32-bit color system.

When installed, the extension becomes part of the basic PageMaker application. It can perform color separations of objects created within the program and of EPSF files. Color TIFF and PICT2 files cannot be separated; however, a PageMaker file can be saved as a PostScript file with color TIFF information intact. A color prepress house can take this file, along with the original TIFF file, and produce four-color separations.

The PageMaker Color Extension will cost less than $200 and will be sold as an upgrade to registered PageMaker owners. It should be available sometime this spring. Contact Aldus at 411 First Ave. S., Seattle, WA 98104; (206) 622-5500.

The Rumor Manager hears that PageMaker 4.0 will finally answer users' prayers with a search-and-replace feature and a spelling checker, among other goodies. Aldus is also working on ways to link PageMaker with high-end color prepress systems. Unlike Quark and Letraset, which have exclusive interfaces



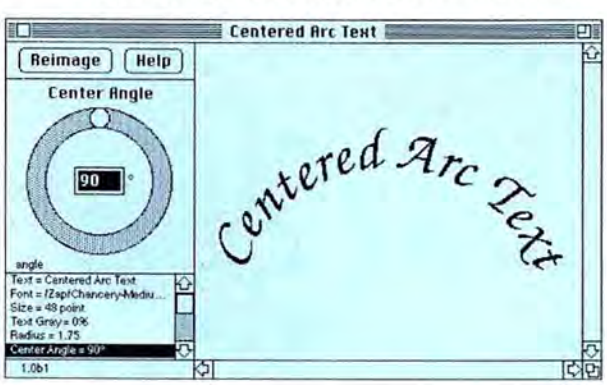
between their page-layout programs and Scitex and Crosfield, respectively, Aldus is developing a universal handshake that will link PageMaker to all the prepress players.

■ Aileen Abernathy

Clippings

TypeStyler: Broderbund has delayed until May the release of TypeStyler, its type-customization program, in order to include ten fonts from Agfa Compugraphic. This generous addition will raise the price only $50, to $199.95. TypeStyler should certainly give LetraStudio a run for the money. TypeStyler is $300 cheaper; it comes with more fonts and can manipulate any other third-party PostScript font; and neither the program nor the fonts are copy-protected. Contact Broderbund Software, 17 Paul Drive, San Rafael, CA 94903; (415) 492-3200.

SmartArt: If you don't need all the frills of LetraStudio or TypeStyler, check out SmartArt from Emerald City Software. This DA lets you create special text and graphics effects on the fly from within any program. You pick the effect you want from its library of EPSF routines; enter the desired text; adjust the typeface, size, angle, color, or other parameters; then paste the high-resolution text or graphic wherever you need it. Volume 1 ($149.95) has 15 text effects and should be available when you read this. You can reach Emerald City Software at P.O. Box 2103, Menlo Park, CA 94026; (415) 324-8080.

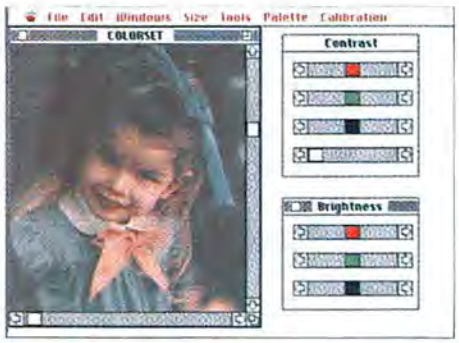


SmartArt is a savvy DA that creates special text and graphic effects. Just select the effect you want, modify the parameters to suit your fancy, and paste it at will.

Colorset: Tired of monotonous monochrome from your gray-scale scanner? With Colorset, a software and filter package, any gray-scale scanner can capture full-color images. You scan the same image three times, each time with a different colored filter. Colorset's software combines the three images into a color composite that you can tweak with built-in color-correction tools. By the time you read this, the $199.95 kit should provide truer colors through better filters and improved software. Contact Studiotronics, 1031 S. Semoran Blvd., Winter Park, FL 32792; (407) 657-7018.

Pixelmaster Thermo-Jet: Howtek is now offering its Pixelmaster Thermo-Jet to the Mac world. This color printer uses a unique spinning head to deposit drops of melted colored plastic onto a traveling sheet of plain paper. Its resolutions are 240-x-240 dpi for graphics and 240-x-480 dpi for text. Replenishing its four inks involves occasionally inserting solid plastic "crayons" into slots that accept only the correct shape/color. Howtek claims per-page costs of 5 to 10 cents. The Pixelmaster, configured for a Mac, sells for $6,995, including a QuickDraw driver. A PostScript-compatible software printer driver is available for an extra $695. Contact Howtek, 21 Park Ave., New York, NY 03051; (603) 882-5200.

KeyMaster: Your favorite graphics and logos are now just a keystroke away, even in programs that don't support EPSF or PICT files. Altsys has released KeyMaster ($99.95), which can create a high-resolution PostScript font of up to 16 characters from imported artwork. Once you've converted your graphics into a font, you can resize images by simply changing the point size. Contact Altsys Corp., 720 Avenue F, Suite 109D, Plano, TX 75074; (214) 424-4888.



Colorset software combined three gray-scale scans of a color photo into this color composite. The three-filter/three-pass process is sensitive to scanner quality and image alignment.

LetterPress: For those who believe too much is not enough, Image Club Graphics is offering LetterPress, a CD-ROM containing more than 600 PostScript typefaces licensed from International Typeface, American Type Founders, VGC, and other companies. The $5,995 type library, which is bundled with a CD-ROM drive, will ship in June. Contact Image Club Graphics, 1902 11th St. S.E., Calgary, Alberta, Canada T2G 3G2; (403) 261-7013.

Multi-Ad Creator: Multi-Ad Services has unveiled Multi-Ad Creator, a program that produces advertising layouts. Besides sporting many of the powers of page-layout software, Creator has built-in object-oriented graphics tools, including a star-burst balloon (the kind used with "WOW!" and "NEW AND IMPROVED!") and full color support for both text and graphics. Special text talents include word spacing and letter-spacing control, wrapping both outside and inside objects, free rotation, and auto-resizing of text to fill a given space. It can produce spot and four-color separations with control over screen angles. All of this adds up to a price of $995; volume discounts are available. Contact Multi-Ad Services, P.O. Box 3900, Peoria, IL 61614; (309) 692-1530.

■ Aileen Abernathy and Salvatore Parascandolo

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DTP

Until recently, even MacUser*'s DTP section was produced using conventional printing methods. We've now made the leap to bona fide DTP, and we're facing some of the real-world concerns of desktop publishers under production pressures. This month Bove and Rhodes discuss two common image-reproduction problems.*

Getting the Picture

Desktop publishing has its ups and downs. On the one hand, you can get magnificent results, even on low-end laser printers. But on the other, mysterious problems behind the scenes can produce jagged images, banding, and moiré patterns, even on the highest-resolution equipment. Two of the downs are the size and complexity of scanned images, and bit-mapped graphics that contain dot patterns. These can easily get you into trouble in a production environment using even the best page-makeup software.

The Missing Link

Before discussing what can go wrong, we should explain some fundamentals. When you place a gray-scale image into any of the top page-makeup packages (PageMaker, Ready,Set,Go!, and QuarkXPress), they don't really import a copy of the image. Instead, they establish a name link to the original image file and concoct a space-saving, lower-resolution version of the image to display on-screen. When one of these programs prints the publication file, it follows the established links to the original image to print a high-quality graphic, not the lower-resolution display version.

The programs establish these links so that their files don't become enormous, as they would if they saved all of the voluminous gray-scale information. With the gray-scale files already available on disk, it's more efficient to remember where to get the information, rather than duplicate it. However, this link can break very easily. All you need to do is move the gray-scale image files to another folder or another disk, or rename them (or delete them, heaven forbid).

What happens when the link breaks? QuarkXPress 2.0a beeps and prints the low-resolution display image. You have to know what the beep means to fix the problem. In a Linotronic studio, however, one beep will probably go unheard, and the page will print anyway and be wasted.

Ready,Set,Go! 4.5 gives you more warning. When you first open the publication document, if it can't find the original image file for a placed image, the program displays a warning message that you must OK. It then places an *X* in the frame for that image. You can use Get Picture to get the image from the appropriate file.

PageMaker 3.01 gives you a similar warning and choices. When you open a publication, if PageMaker doesn't find the image file in the publication's folder, the program displays a dialog box asking for it. Then you can either ignore the original higher-resolution version and print using the lower-resolution version, or locate and use the original version via a normal Place dialog box that is automatically presented.

Resizing with Fine Patterns

Another way to get into trouble with graphics is to resize a bit-mapped image that contains a dither pattern, such as the pattern that appears on a standard Macintosh desktop. If you resize the image by a power of two (such as doubling or quadrupling), the pattern dots will uniformly enlarge, and the image will print fine. Unless carefully calculated, however, other multiples can cause unwanted pattern effects.

Of the three leading page-makeup programs, only PageMaker provides built-in size steps for avoiding pattern problems. This feature takes into account the resolution of both the image and the target printer. You can snap an image into these built-in sizes by holding down the Command key while resizing (holding down Shift as well constrains the resizing to be proportional). If one of the automatic scaling steps produces too large an image, you can always crop it to fit the available space. Although PageMaker does not always get it right (occasionally we get dark bands in a resized screen dump), we would be lost if we didn't have this built-in scaling feature. Is it really too much for us to ask the computer to do the calculating?

The other page-makeup programs provide the ability to resize images to practically any size, but *you* have to cal-

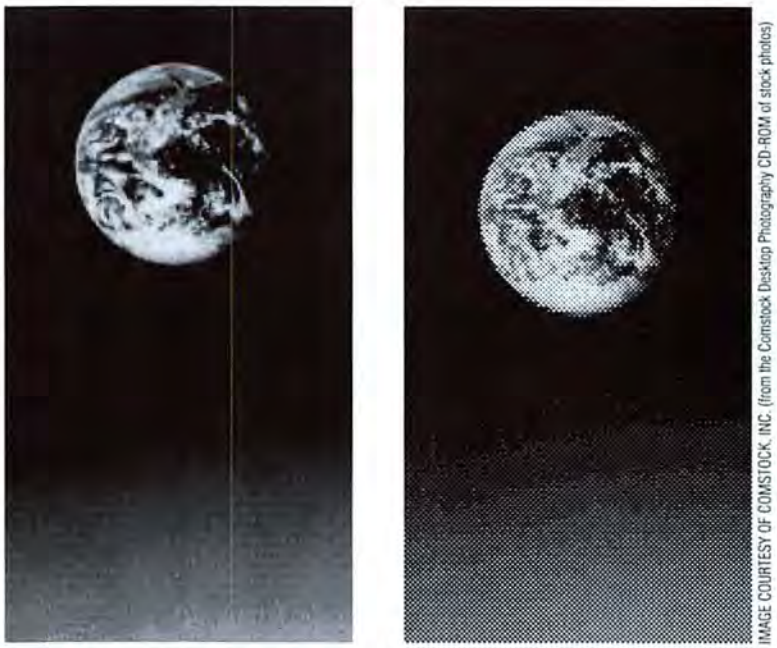
Is it too much for us to ask the computer to do the calculating?



By Tony Bove and Cheryl Rhodes

culate the best percentages for the resolution of your target printer. If you don't, you run the risk of printing flawed patterns, which can be frustrating and expensive when printing to a Linotronic.

PageMaker's built-in scaling may be a godsend, but if you are not aware of the factors on which it bases its calculations, you may be resizing the image to fit the resolution of the wrong target printer. If, for example, you resize an image while the LaserWriter or similar 300-dot-per-inch (dpi) printer is chosen in the Print dialog box, you get sizes appropriate for 300-dpi devices, which may not work for other resolutions. You must first use the Chooser to select the final output device *before* resizing with the automatic scaling feature.



When the link breaks between a placed gray-scale graphic and its original image file, PageMaker 3.01 gives you a lower quality placeholder (right) instead of the high-resolution image (left).

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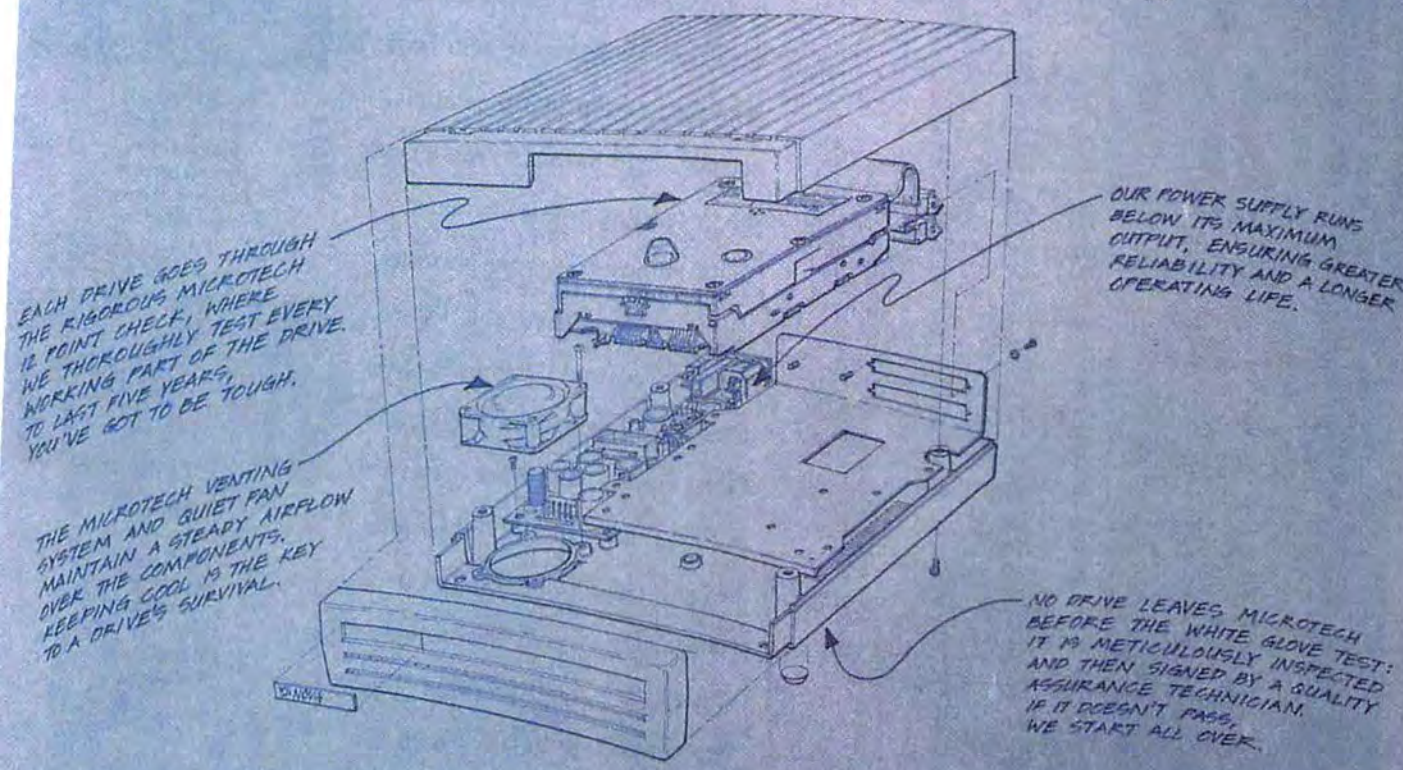
And VMacS, which allows users to store and manage Macintosh files on the VAX's hard disks and tape drives.

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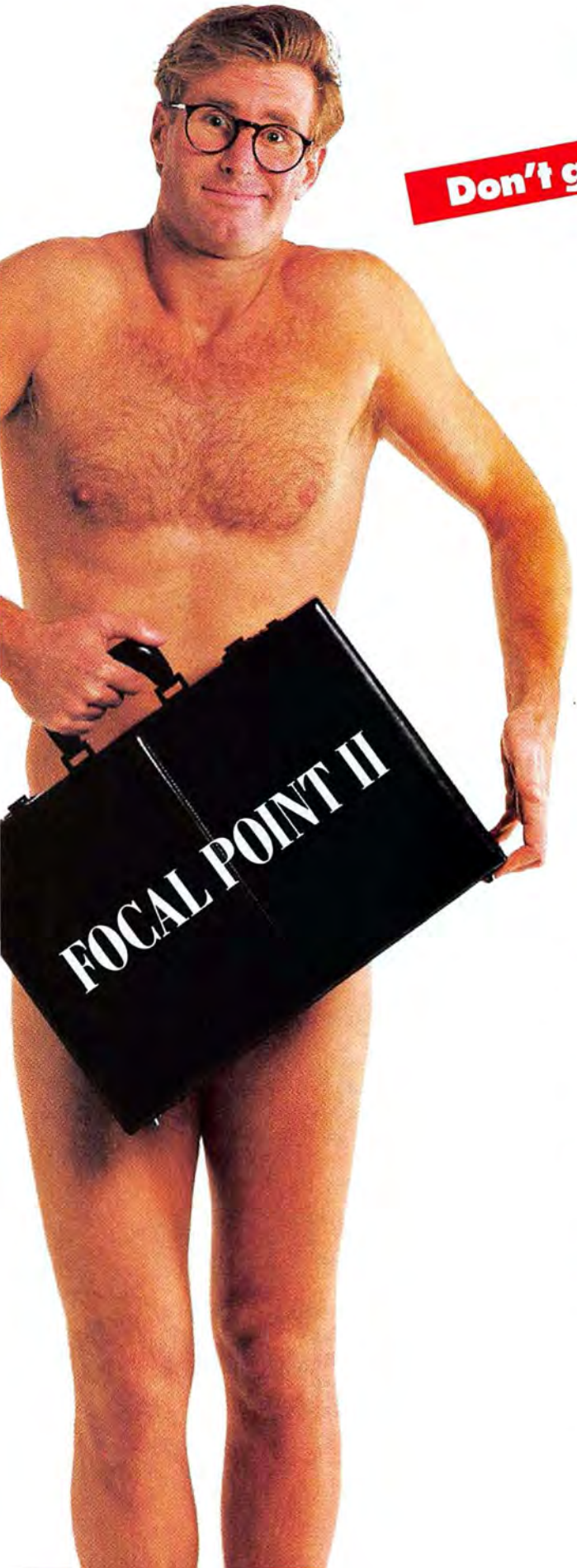
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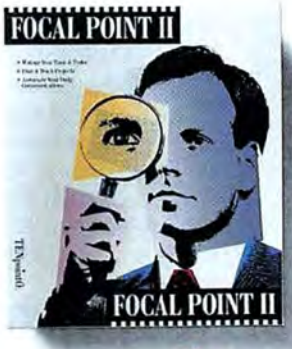
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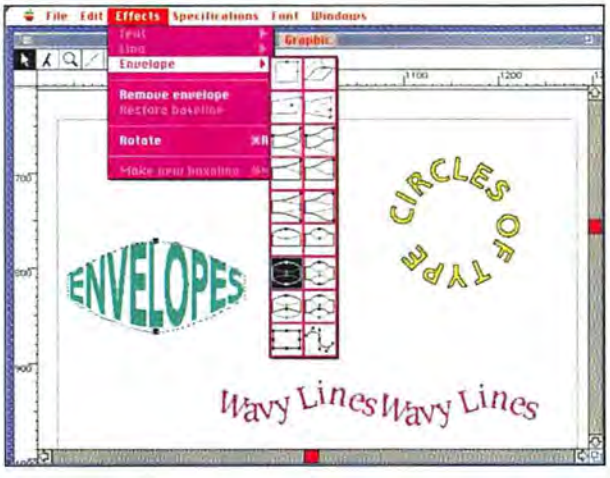
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LetraStudio

Hundreds of typefaces are now available on the Macintosh. Unfortunately, few of these are high-quality display faces suitable for professional graphic design. Letraset USA has addressed this failing with LetraStudio, a type-customization program that enables you to create headlines, logos, signs, and other special typographic effects that previously had to be done by hand or required expensive camera work. Never again will graphic artists run out of the letter *E* or pull a sheet of press type from the drawer only to find the letters dry and cracked.

LetraStudio is the first Mac program that lets you bend, stretch, rotate, slant, curve, scale, and tint type to any specifications, using Bezier curves and Pantone colors. However, the program works only with Letraset fonts; it does *not* work with Adobe or other PostScript fonts. LetraFonts cannot be installed in your System or downloaded to a printer; they are graphics files accessible only through LetraStudio. Two fonts (Corinthian Bold and Caxton Roman Book) come with the program; you receive two more LetraFonts (Cabaret and Freestyle Script) when you return the registration card. More than 70 additional faces are currently available, with 200 expected by the end of 1989 as Letraset — one of the world's major suppliers of press type — brings its enormous font library to the electronic desktop.



One of LetraStudio's strengths is its use of envelopes. These predefined shapes can be applied to any text or graphic for special distortion effects. You can also type text in a circle or curve the baseline for a sinuous look.

The editing and drawing tools are similar, though not identical, to those of other Mac programs. A Type Specifications dialog box lets you adjust letter height to within a hundredth of a point and provides controls for horizontal scaling, alignment, kerning, and letter overlap. You can draw basic graphic objects (lines, rectangles, circles), and both type and graphics can be stroked or filled with shades of gray or Pantone colors. You cannot, however, custom-mix colors. LetraStudio prints spot-color separations but not process-color separations. You can get around this by using Adobe Separator to produce four-color process separations of LetraStudio files.

LetraStudio's real strengths are its special distortion effects. Text can fill a variety of predefined shapes called *envelopes*, which appear as icons on a pop-out menu. You choose from 14 distortion shapes as well as scaling and skewing options. To use an envelope, you select the type or graphic, choose an envelope, and reshape the object by tugging on the appropriate handle. The text then shifts to fill the chosen envelope; the degree of distortion is up to you.

A separate Line menu lets you distort the baseline of text. You can curve the baseline in six ways, including making it a Bezier curve with three anchor points and direction handles.

In addition to creating line or envelope effects, you can rotate text or type in circles or along irregularly shaped line paths. Individual letters can be selected and manipulated as separate units with the line and envelope effects. Using a keyboard command, you can move a letter above or below the baseline of surrounding letters, or to the left or right.

Both text and graphics can be duplicated and tiled. If you hold down the Option key when choosing Duplicate, a dialog box lets you indicate the number of duplicates and the horizontal and vertical offsets. You can also indicate a percentage of change in the size of the text or graphic object as it is duplicated, as well as the percentage of black.

LetraStudio imports template files in Encapsulated PostScript Format (EPSF), PICT, or paint format. The templates, which appear on the screen in light gray but do not print out, can be used for tracing or for positioning artwork that will be combined with the LetraStudio file later.

Finished font work will print with high resolution and true WYSIWYG when printed on a PostScript laser printer or typesetter; files can also be sent to QuickDraw printers. Or you can save files in EPSF to place them into the rest of Letraset's product family — Ready,Set,Go!, ImageStudio, and StandOut! — as well as most other page-layout, illustration, paint, and presentation programs. Unfortunately, LetraStudio cannot read EPSF files, which means that if you want to make changes later, you also have to save the file in the program's native format. PICT images of LetraStudio files can be transferred to other programs via the Clipboard.

LetraStudio ★★★★

List Price: $495 for program and four fonts; $75 for each additional font.
Published by: Letraset USA, 40 Eisenhower Drive, Paramus, NJ 07653; (201) 845-6100.
Version: 1.0
Requires: 1 megabyte and a hard disk; 2 megabytes recommended.
Compatibility: Mac II and MultiFinder friendly.
Application Size: 429K
Copy Protection: None for LetraStudio; LetraFonts limited to four installations.

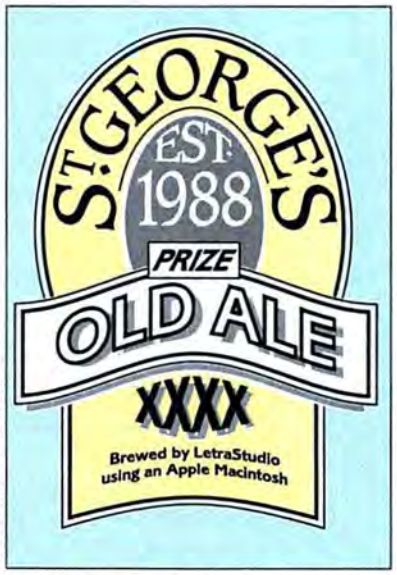


IMAGE COURTESY OF LETRASET USA

With LetraStudio, you can use a variety of special type effects to create distinctive headlines, logos — or beer labels.

LetraStudio does have a few minor foibles. Screen refresh is slow, especially if you have only 1 megabyte of RAM or use the program's high-resolution setting on a gray-scale or color monitor. You can't use LetraStudio with certain DAs, such as DiskTop (which causes a hard-disk crash). The program also needs more Illustrator-like keyboard shortcuts for accessing different tools from the work area. As with Illustrator, pressing the space bar turns any tool (except the Text tool) into a scrolling hand. But none of the other tools can be accessed in a like manner; you have to return to the Tool palette and click with the mouse.

In addition, LetraStudio is hamstrung by its archaic copy-protection scheme. The program itself is not copy-protected, but all LetraFonts must be installed with a special program that allows only four installations. And be forewarned, disk optimizers like DiskExpress can corrupt the font files, using up one of your precious installations. At $75 a pop, the fonts are a bit pricey — considering that they can be used only with LetraStudio, even in their unedited form. These restrictions, coupled with the fact that no other PostScript fonts can be used with the program, may keep sales from really taking off.

Still, LetraStudio's ability to treat type like a graphic element makes it a worthy addition to the repertoire of any serious desktop publisher or graphic artist. Even a novice can easily achieve professional-looking results. The package will seem overpriced to those who have never dealt with press type. But to those who have forked out $10 or more per sheet, this package is a welcome bargain.

■ **Diane Burns and S. Venit**

Springboard Publisher

If you choose software by price, you'll either be very attracted by Springboard Publisher's low cost or wonder how good a page-layout program that costs 60 to 75 percent less than the leading programs can be. The answer: not great, but a lot better than its price indicates.

Springboard Publisher combines word-processing, page-layout, and graphics capabilities in one program that's extremely easy to learn. Overall, it's a decent desktop-publishing program as long as your aspirations are limited. It won't do a lot of the slick stuff that the big ones will, although it's as hard to use as they are (without the same quality of output).

As in QuarkXPress and Ready,Set,Go!, the program uses frames that can hold either text or graphics but not both. However, either type of frame can be placed over or within any other frame, and any frame can have a border. The number of frames is limited and becomes the ultimate limit on document sizes. You can have up to 30 frames per page and 256 frames per document. Thus, you could theoretically have a 256-page document consisting of solid, single-column text on each page. If your average newsletter page uses between 5 and 10 frames, then the maximum size of your documents will normally be 25 to 50 pages.

Each frame can have up to nine snaking columns, with uneven widths and gutters. There are rulers and customizable grids. You can wrap text around graphics either automatically (in which case the offset distance can't be altered) or manually by drawing your own polygonal enclosure. Page numbering is automatic, with many styles to choose from. You can also include text with the numbering, either before the number or after it. Alas, this is the program's closest approximation of headers or footers.

One feature unique to Springboard Publisher is the ability to have different page orientations within a single document. Thus, you can mix portrait and landscape pages, which is useful when you want to print a table or illustration sideways. On the other hand, there are no facing or double-sided pages and no Master Page feature, although you can get around this by creating clones of an empty layout. The program can also copy entire pages — layout, content, or both — to other pages, a nice touch.

When a new page is created, it defaults to a single text (background) frame. You can type directly into the frame, import text created elsewhere — in text, MacWrite, or Word format — or use the program's built-in typing window. Avoid typing substantial quantities of text directly into a frame; response is sluggish, and typing quickly becomes frustrating.

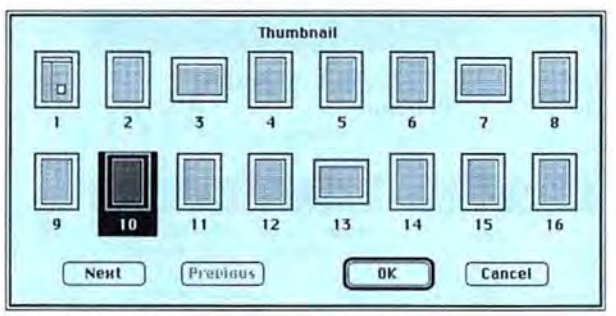
The typing window is an excellent alternative, one I'd like to see in high-end programs. Since the text isn't constantly reformatted (as it is in frames), response

Springboard Publisher ★★★

List Price: $199.95
Published by: Springboard Software, 7808 Creekridge Circle, Minneapolis, MN 55435; (612) 944-3915.
Version: 1.06
Requires: 1 megabyte; System Tools 5.0 or later.
Compatibility: Mac II and MultiFinder friendly.
Application Size: 601K (including 29K Help file).
Copy Protection: None

is good, although the program may not be able to update the screen as fast as you can type.

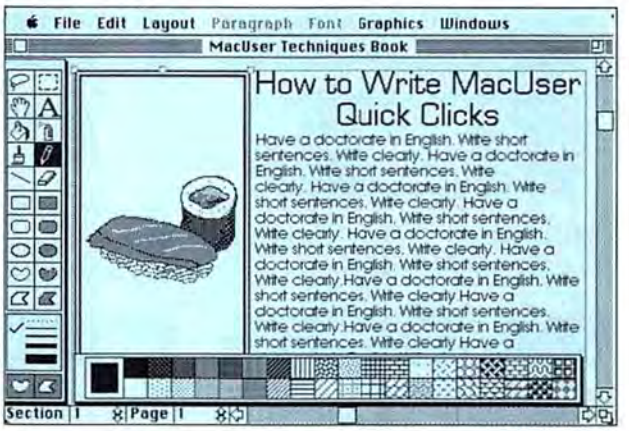
Springboard Publisher has some problems handling text. It's virtually impossible to position text exactly within a frame, even using the rulers. Imported text is best placed into background text frames, because if your text overflows the first frame, additional pages are automatically created to hold the text. If text is placed into nonbackground text frames, you must manually retrieve the excess words. You can link nonbackground text frames for automatic text flow by typing frame numbers into a complex dialog box. I find this method very awkward and totally un-Mac-like.



You can see up to 16 pages at once — including their orientation and layout — in Springboard Publisher's Thumbnail view.

Text formatting is slow, and unseen text (which is being held until space is created for it) doesn't always format. For example, if you reduce the point size of imported text to make it fit in a frame, you will have to repeat the formatting each time a new, unformatted line appears at the bottom of the frame. You could format text in the typing window, but tabs are inoperative. The best solution is to prepare your text carefully outside Springboard Publisher, build a blank document for it, and then import it.

Naturally, there are no style sheets. Type sizes are limited to 1-point increments between 9 and 72 points. Springboard Publisher has some leading and kerning abilities, which are called *custom spacing* and *character spacing*, respectively. Leading can be increased, but the program does not accept negative leading, and there is no automatic kerning. The program does have search-and-replace and automatic hyphenation. The latter should be used only if you have time and want a good laugh.



Springboard Publisher's graphics editor has an interface much like that of MacPaint. Although it's familiar and easy to use, it limits you to paint-quality graphics.

One of Springboard Publisher's strongest features is its built-in paint program, which is a virtual clone of MacPaint. The paint features are activated whenever you select a graphic frame, and all the traditional tools are present, even MacPaint's Brush Mirrors and Trace Edges options. Graphics can be rotated, inverted, cropped, distorted, and skewed.

The program also has a set of basic drawing tools for lines, circles, rectangles, and such, which can be drawn in both text and graphic frames. Unfortunately, whatever you draw becomes a permanent fixture and can't be moved, resized, or erased. Text won't run around these graphics, either.

You can import paint or PICT graphics, but Encapsulated PostScript Format (EPSF) and MacDraw-type graphics are not supported. Imported graphics are not automatically resized to fit the frame into which they are placed. You have to make the frame large enough to show the whole graphic, shrink the art, and then resize the frame.

Graphics exist only as 72-dot-per-inch (dpi) bit maps, and there are no color or gray-scale options. The low resolution isn't a problem if your final output is to a dot-matrix printer. However, laser-printed output is unacceptably poor.

If your publishing goal is club newsletters and fliers, Springboard Publisher is a good, cheap solution. Although it has several minor bugs and can be unbearably slow, the program meets its stated objective of providing a simple method for making simple documents. It's better at page layout than stand-alone word processors, and it offers a few features not seen even in high-end programs. However, if you plan to use a laser printer for output or want to explore the power of desktop publishing, Springboard Publisher won't be enough.

■ **Steven Bobker**

FONTastic Plus

Once upon a time, the mystery and beauty of type design were known only to editors and art directors. They looked at different typefaces as expressions of moods or as precise tools for communicating the nuances of the printed page. Which face was more inviting to the reader? Which was more readable? To serif or not to serif?

Then came the Macintosh, loaded with fonts both plain and fancy, and its democratizing effect on Gutenberg's legacy. FONTastic Plus is a bit-mapped font editor for those who want to explore all the fontastic possibilities, whether it's the creation of a logo or the exuberance of designing your own font. The program enables you to customize any bit-mapped font — Chicago, New York, Venice, and so on. You can add characters (fractions, anyone?), modify existing ones, or even

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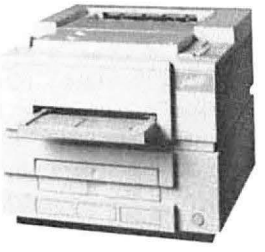
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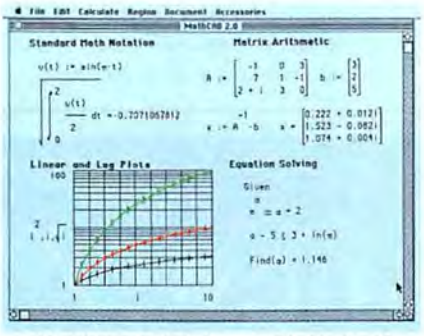
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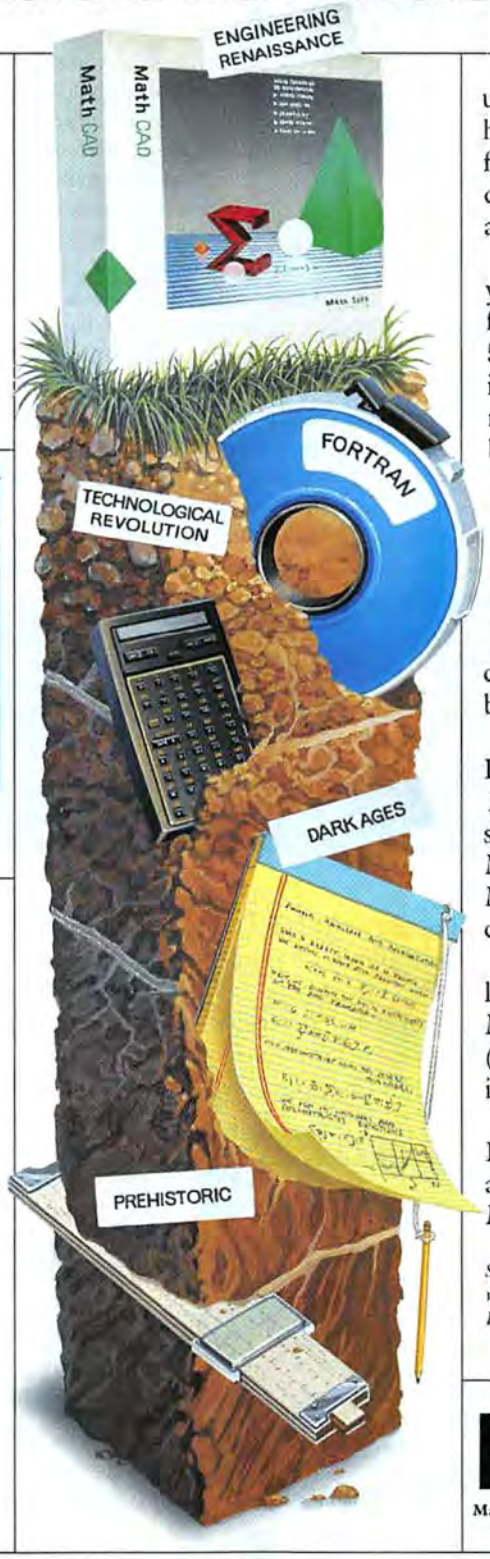


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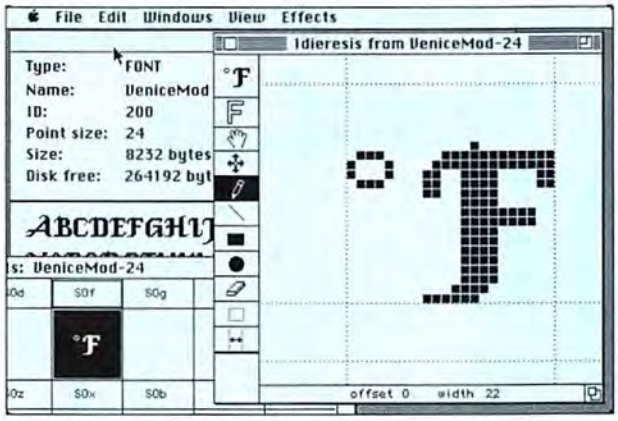
System Requirements: Apple Macintosh Plus, SE or II, with a minimum of 1MB RAM. Supports all ImageWriters® and LaserWriters.®

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FONTastic Plus lets you manipulate the characters of any bit-mapped font using paintlike tools. Here, the degrees Fahrenheit symbol has been added to Venice by copying the capital *F*, adding a circle, adjusting the character width, and saving the new character to the Shift-Option-F position.

build special-purpose fonts such as one for a foreign language. FONTastic Plus cannot edit high-resolution laser fonts, however; for this procedure you need Altsys' PostScript editor, Fontographer.

Using FONTastic Plus, you can manipulate fonts installed in your System or within an application. The program also comes with several decorative fonts for your practicing pleasure. After selecting a font and copying it to a new file, or suitcase, you see a grid of the entire character set, including Shift-Option and other special key combinations. Selecting a letter brings up the Character window, which displays the letter in FatBits mode. You can then edit the character pixel by pixel, using tools similar to those in paint programs, including a pencil, eraser, line-drawing tool, and filled box and circle.

Letters (or pieces thereof) can be copied, rotated, or flipped to create other characters quickly. For example, an *n* can be turned into an *h* or a *u*. Or you can create a new font that can be read only in a mirror. A background editing plane lets you use an existing character as a pattern for creating a new one. By cutting and pasting, you can shuffle characters between fonts or rearrange the keyboard to suit your fancy. You can also paste images from MacPaint, which comes in handy when you want to create a custom dingbat. Once you're satisfied with your handiwork, the modified characters can be saved back to the original font or installed as a new font.

Keep in mind that these are bit-mapped fonts, the kind used by the ImageWriter. Bit-mapped fonts will print on a laser printer, but they lack kerning and frequently suffer from the jaggies. The advantages of PostScript smoothing become painfully obvious when you try to create a headline in 24-point Chicago.

esigning without a new Z21

Design a two-page spread on the biggest 19" black and white monitor available and it will pinch in your margins. Or round off your edges. Or at best condense your type to the point where you have to squint to read it. Your ideas become restricted by your hardware. E-Machines believes that shouldn't happen.

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Still, FONTastic Plus does what it does very nicely. The Style command automatically creates bold, italic, underline, outline, and shadow characters or fonts. The program also offers expanded, condensed, and inverted style options. Like its older siblings (Altsys developed both Fontographer and FreeHand), FONTastic Plus shows tremendous dexterity at type scaling. You can resize a single letter or, with one command, scale an entire font up to 127 points high by 254 points wide. The Metrics window lets you alter individual character widths and intercharacter spacing. These changes are incorporated into the FOND resource and apply to the entire font family.

Version 2.0 of FONTastic Plus lets you edit larger fonts, and it supports the NFNT font-handling system. This means you can convert font families from the FONT to NFNT system or vice versa. Such conversions help avoid font-numbering conflicts and help streamline font menus by eliminating individual style listings. (Be sure to peruse the Read Me file that comes with the program; it warns of potential problems in converting Apple-supplied FONTs to NFNTs, as well as other font-editing dilemmas.)

Unfortunately, version 2.0 is not compatible with MultiFinder, nor does it work with color fonts. The manual provides useful background information on fonts and a good tutorial on creating and installing bit-mapped fonts. This is the same manual that accompanied the original release, however, and some of the information is outdated or just plain wrong. For example, the explanation of FONDs is misleading, since the manual was written before the Mac SE and II were released. A major revision of the manual is sorely overdue.

FONTastic Plus is a handy program for those who want to give their documents a special, fancy, or finished look. It can also be extremely beneficial if you work in a specialized field — such as language translation, music, or medicine — that requires custom symbols or letters like the umlauted *e* in the byline below.

■ Noë Goldwasser and Aileen Abernathy

FONTastic Plus ★★★★½

List Price: $99.95
Published by: Altsys Corporation, 720 Avenue F, Suite 109, Plano, TX 75074; (214) 424-4888.
Version: 2.0.1
Requires: 512K; one 800K or two 400K disk drives.
Compatibility: Mac II friendly; conflicts with MultiFinder.
Application Size: 191K
Copy Protection: None

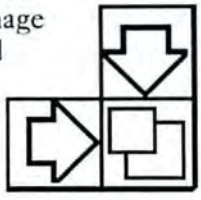
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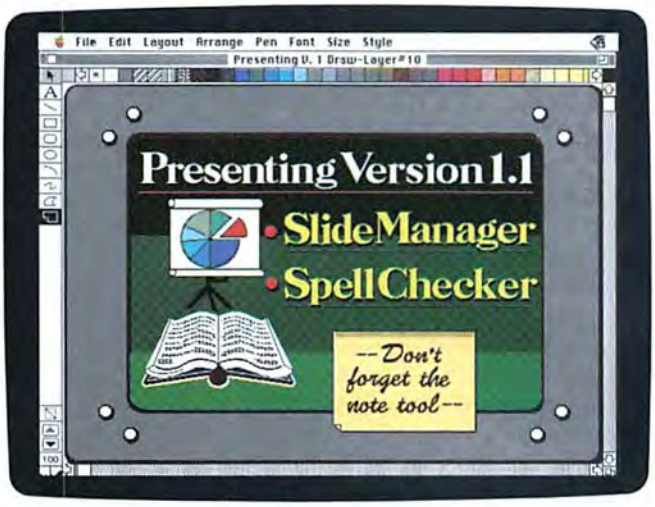
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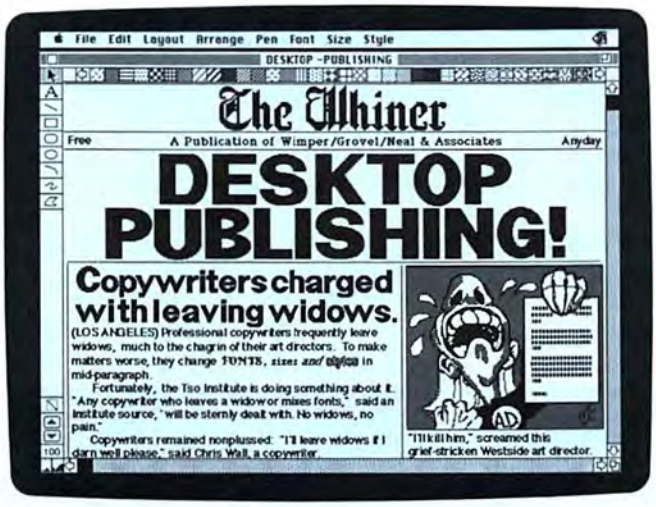
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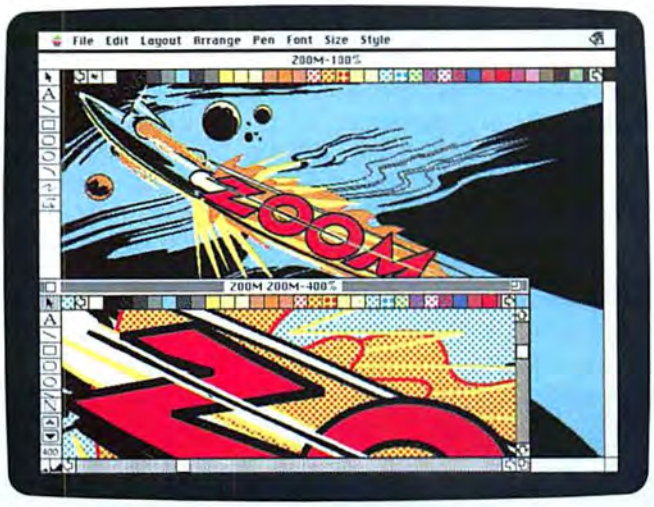
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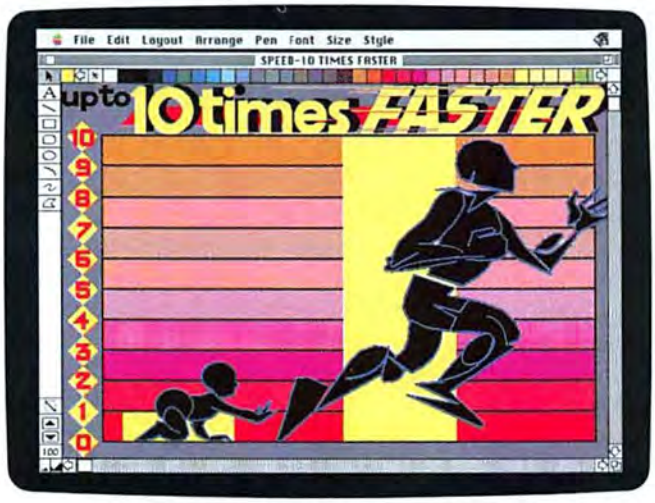
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Font Follows Function

A team of veteran designers offers some sage advice to help you put your best font forward.



You have a new client who wants a newsletter. Together, you've nailed down the publication's name, basic design, paper stock, printing method, and press run. But what about the typefaces? You know better than to use bit-mapped fonts like Geneva and New York, but any PostScript typeface will do, right? Wrong. Every typeface has its own personality, which can affect the whole look of a publication. The right font tells folks what your publication's about before they read a word. The wrong one could make your legal newsletter look like a circus flier.

The first step in choosing appropriate typefaces is to analyze the target readership. Factors like age, sex, profession, and common interest can help determine what fonts to use and how the newsletter should look. When choosing a typeface, keep in mind that two fonts can have the same point size and still display vast size differences. For example, 12-point Times Roman is smaller than 12-point Melior. (Why the inconsistency? Point size originally referred to the body of lead that the letter was cast on, not the physical size of the letter itself.) Some letters are broader than others, which affects column width, and the leading needed will vary.

A good specimen book showing the different characteristics and applications of typefaces is one of a designer's most important tools. Before specifying a typeface, though, see how it looks on your own equipment. Typefaces may carry the same name on different typesetting systems (phototypesetting, cold type, or computer), but you'll find that they can look very different.

To show how the choice of typeface depends on the audience and printing method, we dreamed up three newsletters, each serving a different purpose. First, a brief look at each newsletter and its intended readers. Then, in a case-by-case analysis, three designers discuss their typeface preferences.

Attorney's Case: This monthly eight-pager is distributed to all local lawyers in a mid-sized city, listing meetings and covering new court cases — pretty dry stuff. The pages are 8.5-x-11 inches, strictly black and white. The client will probably use a photocopier to produce the 300 copies needed.

The Book Nook Book Notice: This 16-page, 5.5-x-8.5-inch newsletter lists newly released books and includes photos of the book jackets. Readers are customers of The Book Nook. The client is willing to use a second color on the front and back covers. The newsletter will have some small type, so we'll use the Varityper VT600 laser printer for output because it offers 600 dots per inch (dpi). Around 8,000 copies will be printed.

Wonderful World of Wee Ones Fashions: Another monthly, 8.5-x-11-inch, eight-page newsletter, this time distributed to customers of a children's clothing store. Much of the content is directed at kids and should be printed in a larger point size. Naturally, the rest of the text encourages parents to buy the sponsor's products. The client is willing to print on glossy paper stock and to use two Pantone Matching System (PMS) colors, so the output will be to a high-resolution typesetter such as the Linotronic 300. The total press run is 10,000 copies.

By Sal Glynn and Carl Haeberle

ILLUSTRATION: TERRY ALLEN

Attorney's Case

The short print run forces you to watch costs carefully because if the production costs escalate, your designer fees will suffer. With that in mind, we'll use a laser printer to produce the master pages. Besides, the client will probably change the contents a dozen times before you finally ship the masters to the copy center for duplication.

Carl Haeberle (owner, The Mac Studio): I like Palatino for both headlines and body text. It's traditional and easy to read, and in larger headline sizes Palatino has a classic look that will really set the newsletter off. Palatino doesn't print accurately on a 300-dpi laser printer, because the thin ascenders and descenders are artificially thickened. But this also makes the font more readable on copier paper.

Headlines: Palatino

Body text:
Palatino 10 pt.

While you might not think so at first, designing with type can be fun. The more you learn, the better results you will achieve. And, if you

Rex Brooks (art director, The Mac Studio): The Melior family is a good choice for text, with ITC Cheltenham Italic, Bold, and Bold Italic for headlines. Melior is a very legible serif typeface, with a distinctive yet conservative character. Cheltenham, designed for newspapers in the late nineteenth century, complements Melior and gives headlines a newspaper-like significance. It prints well under poor conditions.

Headlines: Cheltenham

Body text:
Melior 10 pt.

While you might not think so at first, designing with type can be fun. The more you learn, the better results you will achieve. And,

Sal Glynn (editorial assistant, Ten Speed Press): Let's keep it simple, with Times Roman for text and Times Bold for headlines. In addition, I would accent the total look with borders and boxes around some text blocks. Times prints well on the laser printer, and it's used everywhere, so people are accustomed to the look. Since *Attorney's Case* is basically information, little should come between the reader and the fast retrieval of information. Times Roman facilitates this.

Headlines: Times Bold

Body text:
Times 10 point

While you might not think so at first, designing with type can be fun. The more you learn, the better results you will achieve. And, if you have the bent,

The Book Nook Book Notice

The client likes soft stock, so we could get by with 300-dpi laser-printer output. But the publication is full of tiny type, requiring at least 600 dpi to maintain legibility. Laser text under nine points is hardly usable; however, the Varityper VT600 provides 600-dpi output, which smooths the jaggies in the small type.

Carl: Melior is a good choice for the body text. It's an easy-to-read serif with no ultrathin components, so 600 dpi will produce reasonable-quality output. For headlines, Franklin Gothic Demi is a good contrast. The two faces work well together — their x-height (height of the lowercase letters) is about the same, and letter widths are compatible. The combination will give the pages good color and balance with a look that's classy but not overbearing.

Headlines: Franklin Gothic Demi

Body text:
Melior 10 pt.

While you might not think so at first, designing with type can be fun. The more you learn, the better results you will achieve. And,

Rex: My approach would be ITC New Baskerville for body text and Clarendon Bold for headlines. New Baskerville is a twentieth century rebuild of a typeface designed in 1792. It's readable, although it's not the most fluid of faces. But the readers of this publication appreciate good type. Why Clarendon? I just like the look of this square-serif face. Clarendon, like many typefaces, has no italic version. It comes only in light, medium (book or roman), and bold weights.

Headlines: Clarendon Bold

Body text:
New Baskerville
10 pt.

While you might not think so at first, designing with type can be fun. The more you learn, the better results you will achieve. And if you have

Sal: My choices would be ITC Bookman for text and ITC Clearface Heavy for headlines. The readers are literate, so they'll expect good type. Bookman and Clearface are different enough to create some excitement on the page. Bookman has a regular body weight, while Clearface displays a clear distinction between thick and thin strokes.

Headlines: Clearface Heavy

Body text:
Bookman 10 pt.

While you might not think so at first, designing with type

Wonderful World of Wee Ones Fashions

Three factors lead this publication to Linotronic output: It's on glossy stock, the long press run means metal plates will be used, and it's three colors (black plus two PMS spot colors), so good registration is important.

Carl: This one is a challenge. The readers are both youngsters and adults, so the typefaces must be simple. Yet the page must reflect the boutique style of the store. The Lucida families, Roman and Sans, work well. The children's portions of the newsletter are set in Lucida Sans and Sans Bold, while the adult sections are Lucida Roman. Lucida is a relatively new typeface designed specifically for electronic publishing. It's an informal, pleasant font that's very readable for youngsters. In this case, the overall design of the newsletter is critical to ensure that the adult and children's sections work together.

Children

Headlines: Lucida Sans Bold

Body text:
Lucida Sans 12 pt.

While you might not think so at first, designing with type can be fun. The more you learn, the bet

Adults

Headlines: Lucida Roman Bold

Body text:
Lucida Roman 10 pt.

While you might not think so at first, designing with type can be fun. The more you learn, the better results you will achieve. And, if you have

Rex: I opted for the same faces for both kids and adults — Optima for text and Peignot for headlines. Optima is a cross between the serif and sans serif faces. It's easy to read, yet there's a fun feel to it. Peignot is a display face, designed specifically for headlines and special advertising uses. It's dynamically fresh and should appeal to both kids and adults.

HEADLINES: PEIGNOT

Body text: Optima 12 pt.

While you might not think so at first, designing with type

HEADLINES: PEIGNOT

Body text: Optima 10 pt.

While you might not think so at first, designing with type can be

Sal: I picked Italia Book for the adult portions and Italia Medium for the children's sections. I'd allow more tracking (wider spacing between letters and words) in the kids' sections to make them more readable. Italia is a fun font with a long history. First cut by Nicholas Jenson in Venice in 1469, it became the basis for William Morris' Golden type of 1890, then was cut again as Veronese/Monotype Italian Oldstyle at the turn of the century. It's funky and flashy and takes color well.

Headlines: Italia Medium Bold

Body text: Italia Medium 12 pt. with wide tracking

While you might not think so at first, designing with type can be fun. The more

Headlines: Italia Book Bold

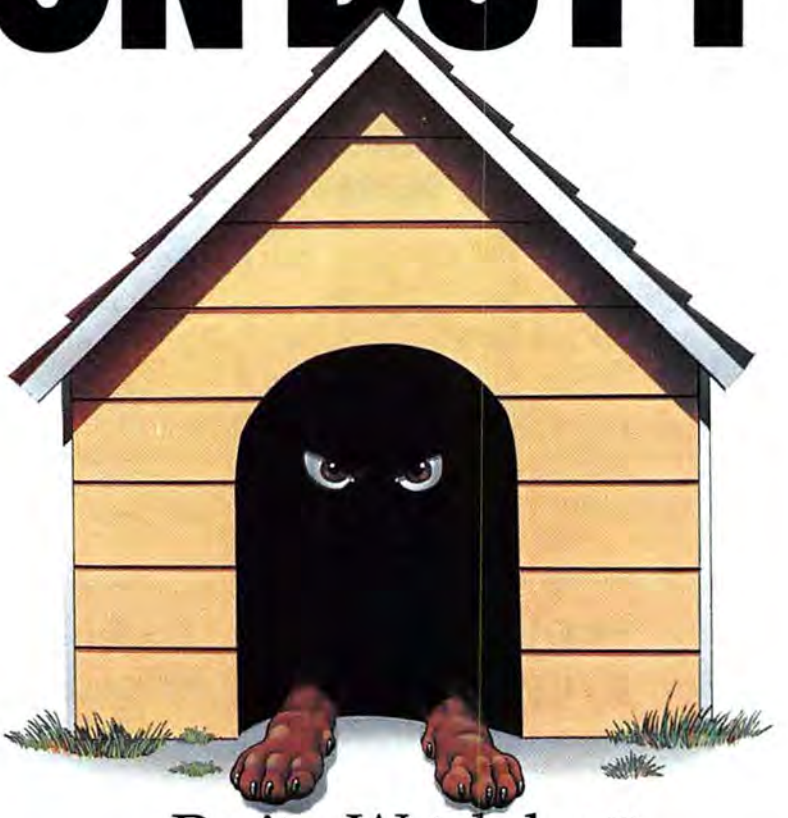
Body text: Italia Book 10 pt.

While you might not think so at first, designing with type can be fun. The more you learn, the better results you will achieve. And, if you

A variety of typefaces are suitable for any newsletter; there's no one correct page design. Type selection can be confusing, but the more you work with type, the easier it becomes. Type selection can even be fun!

Sal Glynn is an editorial assistant at Ten Speed Press in Berkeley, Calif. He has an extensive background in typography and book design. Carl Haeberle runs The Mac Studio, a graphic-design shop in San Francisco that specializes in design and typesetting.

WATCHDOG ON DUTY



Parity Watchdog™ protects the data in your Macintosh SE/30™

If you chose the Macintosh SE/30 for its high performance features, you'll want to be sure that the integrity of your data conforms to the same high standards.

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TIP SHEET

COMPILED BY GREGORY WASSON

Found a trick, shortcut, or smarter way to get something done with a program? Share your hints by sending them to Tip Sheet, c/o *MacUser*, 950 Tower Lane, 18th floor, Foster City, CA 94404. We pay at least $25 for every hint we publish, plus we'll print your name and hometown.

Every month we'll select one tip as the Tip of the Month. The person who sends in that tip will receive $100 for it.

PAGEMAKER 3.0

When you first place a Word document into PageMaker 3.0 or 3.01, you place Word's style sheet into that PageMaker document's style sheet, even if you previously weren't using a style. What happens is that PageMaker, which doesn't have Normal as a style, creates one by taking on Word's default Normal style from the placed text. This style is not actually created within PageMaker; PageMaker borrows it from Word. From then on, PageMaker reads whatever Normal text you place from Word, whether it is formatted differently from the first text or not, as the same Normal style. If you have differently formatted stories to place in your document, be sure to delete the Normal entry from the PageMaker style sheet before placing the additional text. Better yet, since PageMaker reinserts Normal after each Word text placement, either add the desired styles in Word before you place text into PageMaker or save your formatting until your text is in PageMaker.

CLARICE KEEGAN
SEATTLE, WASH.

PageMaker 3.0 enables you to flow text around irregular graphics using an invisible outline that text won't cross. This feature also lets text flow into an irregular shape.

Start by drawing or placing a graphic in a shape that you wish to replace with text. Using the rectangle tool, create two rectangles to cover the graphic that lay side by side, touching in the center of the graphic and extending across the width of the column and above and below the graphic. Select the center text-wrap feature for each of these rectangles. The invisible wrap control lines will appear overlapping in the center.

Working first with the left rectangle, click along the right control line enough times to create the number of points necessary to outline the left side of your graphic. Use these points to stretch the control lines around the left side of your graphic.

Repeat the process for the right side of the graphic using the left side of the rectangle. Be sure the top and bottom control lines still overlap at the center. Once the graphic is outlined, delete it.

Choose the two rectangles and specify None under the Line menu. Now flow your text into the column and it will fill the area you created. Set the text to be justified. This technique works best with small font sizes, tight leading, no paragraph breaks, and no tabs.

CLARICE KEEGAN
SEATTLE, WASH.

The default settings of the Aldus Printer Description (APD) files control the laser-printer screen quality, producing output at 60 lines per inch and placing halftone screens at a 45-degree angle. You can change these default settings using the text editor. With the text editor, open the APD file corresponding to the printer that you are going to use and find these two lines:

@ScreenFreq: ''
@ScreenAngle: ''

Enter your desired screen frequency and the desired screen angle between their respective quotes (see Figure 1) and save as a text-only file. The laser printer will produce the new desired screen definition on your output copy.

For best results, do not use a screen frequency higher than 135 lines per inch and set your halftone screen angle to a multiple of 45 degrees.

TONY HO
SEATTLE, WASH.

EXCEL 1.5

When you're using several worksheets, charts, and macros in Excel simultaneously, quitting out of the application and later returning to where you left off can be a painful process — you must open every worksheet, macro, and chart separately. But Excel lets you return to where you left off with the Resume Excel icon, which is created after quitting Excel. This operation is useful *only* if you haven't tried to use Excel with another work-

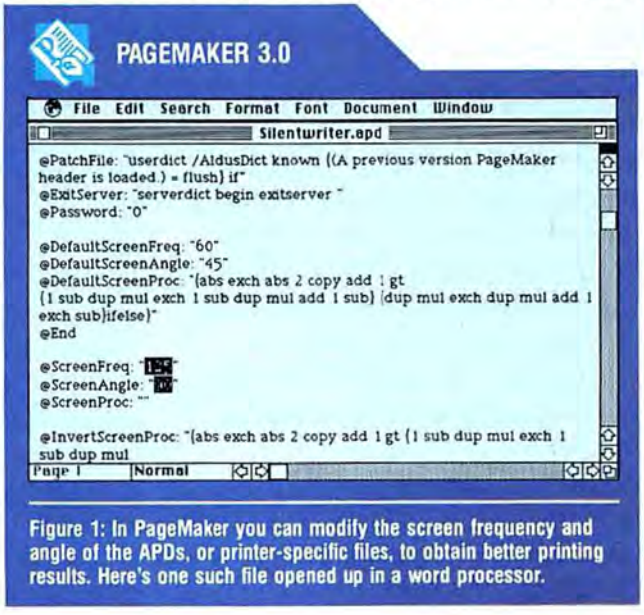


Figure 1: In PageMaker you can modify the screen frequency and angle of the APDs, or printer-specific files, to obtain better printing results. Here's one such file opened up in a word processor.

Just say CRATE



Crate Technology welcomes seven new drives! We offer a great line of external disk drives known as MacCrate ranging from 20MB to our performance driven 160MB.

Our line of internal disk drives known as InnerCrate now ranges from 20MB to 100MB for the Mac SE, and 40MB to our new upgraded high performance 600MB for the Mac II.

TapeCrate, our high speed quality backup system now protects not only 60MB but also 155MB of your valuable information in less than 12 minutes.

MacCrate, InnerCrate and TapeCrate are registered trademarks of Crate Technology, Inc.

InnerCRATE

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Mac II	60MB	28ms	$655.00
Mac II	80MB	27ms	$849.00
Mac II	100MB	27ms	$949.00
Mac II	160MB	17ms	$1525.00
Mac II	300MB	16ms	$2785.00
Mac II	600MB	16ms	$3845.00
Mac SE	30MB	28ms	$560.00
Mac SE	40MB	28ms	$585.00
Mac SE	50MB	28ms	$730.00
Mac SE	80MB	27ms	$849.00
Mac SE	100MB	27ms	$949.00
60MB tape backup			$739.00
155MB tape backup			$1049.00

MacCRATE

20MB	65ms	$545.00
40MB	28ms	$740.00
60MB	28ms	$839.00
80MB	27ms	$949.00
100MB	27ms	$1049.00
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sheet. If you wish to save a configuration, drag the Resume Excel icon out of your System folder and rename it. Resume Excel remembers all the windows last opened, their positions, and the locations of all the files. This also works with older versions of Excel, where the Resume Excel icon appears in the folder that was open when you launched the application.

ROBERT B. ROBERTIS
PALM BAY, FLA.

CRICKET DRAW

If you are using any drawing program and need to draw an oval or circle that is partly solid and partly dotted, you can draw it by cheating: Draw a number of evenly spaced lines over the portion you want to make dotted (Cricket Draw's grate tool is ideal for this), and then make those lines white (see Figure 2).

BRUCE LONG
TEMPE, ARIZ.

INBOX

My coworkers and I discovered an interesting phenomenon when we reverted back to standard time. When everyone came in to work on Monday morning, the first order of the day was to reset our Macintosh clocks back one hour. On returning to work on Tuesday we noticed that all of our clocks had somehow mysteriously returned to daylight saving time. This went on for a number of days, despite repeated settings of our Mac clocks. The culprit? The Mac that ran our InBox mail system — no one had bothered to set this clock to standard time. The InBox message center resets all of the Macintoshes on the network to its clock.

STEVEN R. ADAMS
CLOVIS, CALIF.

APPLE HD SC SETUP

If you are unsuccessful in using Apple HD SC Setup to initialize a non-Apple hard drive, here is how you can do it.

Apple does not manufacture hard-disk drives; drives with Apple labels come from various OEMs. Each SCSI hard-disk drive has its manufacturer and drive-type information in its own ROM. When you launch Apple HD SC Setup, it first finds the drives that are attached to the internal or external SCSI port and requests the manufacturer and the drive-type information from the drive. If either the manufacturer or the drive-type information doesn't match an entry in the predefined list of the Apple-supplied drives, the program gives an error message and refuses to initialize. If your drive happens to be one of the following drives, it will successfully initialize even if it is not supplied by Apple:

Manufacturer	Drive Type
Seagate	ST225N
Seagate	ST50N
Seagate	ST157N
Quantum	Q280
Quantum	Q250
Miniscribe	M8425

If your drive is not listed above, you can still initialize it using Apple HD SC Setup. Open a copy of the Apple HD SC Setup program using a block editor like MacTools or FEdit, and do an ASCII search for "SEAGATE" (in all caps). You will end up in a block that contains the predefined list for Apple-supplied drives. If your drive manufacturer (the OEM, not the supplier) is listed, change the drive-type info on all occurrences of that drive manufacturer. If your OEM is not listed, change one of the manufacturers to your OEM (seven-character limit) and enter your drive type. (Replace existing characters only — do not add or remove characters.) If you do not know the OEM or the drive type, use the shareware program SCSI Evaluator 1.00 or the SCSI Probe cdev to read the ROM of your drive. All the information you enter must be identical to the ROM contents of the drive. This modified copy should work with your drive if your drive has been previously initialized by some other initialization program.

If you have a "raw" drive that has never been initialized, it does not contain the vital information that Apple HD SC Setup uses during initialization, such as the number of blocks that are available, block length, and so on. In this case, you may not be able to use Apple HD SC Setup to initialize your drive unless you use one of the shareware programs such as SF&1 to do low-level formatting prior to using Apple HD SC Setup. [*Take extra precautions when performing this task — it is potentially very dangerous. — Ed.*]

ALI KAYLAN
ROCHESTER, N.Y.

CRICKET DRAW

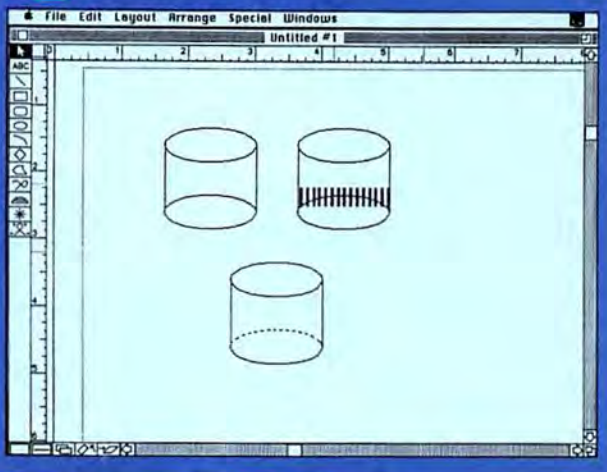


Figure 2: Create the illusion of a dotted line on only part of an object by drawing a series of lines over that section and reversing the lines. Cricket Draw's grate tool, as shown here, is perfect for the job.

EASY ACCESS

Here is a simple tip for those who often use cursor keys in Easy Access.

If your screen freezes and

Smart investors always buy utilities.

You've invested in a Macintosh* to bring out the best in what you do. Now enhance that investment with SuperMac's family of easy-to-use utilities. Programs that protect your work. And help you do more in less time.

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Why stop working just because you're printing? Let SuperLaserSpool and SuperSpool take control. So you can use your computer again seconds after you select "Print." Even if your documents are long and complex.

See if documents have printed, preview them, or zoom in to see part of a page up close. Or send several documents to the spooler and change the printing order later. Both products work faster under MultiFinder* than any other spoolers.

SuperSpool works with any ImageWriter.* And SuperLaserSpool is the only spooler that works with *all* Apple* printers. Plus, it's the only one compatible with PageMaker* 3.0.

MacWeek said, "The speed at which SuperLaserSpool returns control of the Mac to the user is impressive, in some cases even astonishing."

Keep insider information where it belongs.



Lock up your confidential information with Sentinel, a program that lets you convert any document on your disk into a secure code. No one can open it without the password you define. Or a Cray* and about 50 years.

Documents and folders can be grouped together in convenient sets. Then choose one of three advanced encoding techniques, including DES, the U.S. government's official data encryption standard. Sentinel encrypts, locks and unlocks faster than any other program.

The critics at *MacWorld* said, "...Sentinel provides a simple, effective security tool that does exactly what it claims to do and does it well."

How to recover from a crash.



DiskFit copies files on your hard disk for safekeeping. If your disk crashes, DiskFit can completely restore them. Back up just once, and DiskFit makes a complete record of files called a SmartSet.™ Then, DiskFit copies only new or modified files to the SmartSet, and deletes old files. You won't waste time copying files that haven't changed, or disk space storing old versions.

Create backups on floppies, tape, Bernoulli* cartridges or even other hard disks. Of whole volumes, documents, system or application files. And Network DiskFit™ backs up AppleShare* or TOPS* networks.

As *MacUser* said, "DiskFit is so easy to use and so well designed that it may be the program that gets you to do regular backups on your hard disk—making it more than worth the price."



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You'll find our family of utility programs at authorized SuperMac dealers and leading software specialty stores.

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it appears that your Mac has bombed, always try pressing the period key on the numeric keypad. You may have accidentally hit the keypad 0 key, causing the mouse to stay clicked and creating the illusion of a System error.

THOMAS A. WYNN
CLATSKANIE, ORE.

STUFFIT



StuffIt, which has become the industry-standard utility for archiving and compressing Mac files, has a hidden (and very handy) feature.

After selecting the archive you wish to open (or after clicking in the About box if you opened an archive and not the program itself), hold down the Shift key and StuffIt will automatically select all the files, decompress them, and save them to disk.

PAUL FRIEDMAN
SARASOTA, FLA.

THUNDERSCAN



If you're getting a lot of unwanted distortion from your ThunderScan, and the program even crashes occasionally, try putting a piece of clear acetate over the item to be scanned.

I was getting focusing numbers in the low 30s and even the high 20s when I found out from Thunderware that anything lower than 40 was abnormal. But every solution they could offer (short of returning the scanner cartridge to the manufacturer for testing) ended in frustration.

Noticing that the only items that scanned acceptably were glossy photos, I tried the acetate. No more crashes! Focusing in the high 50s and great scanned images are now the rule, rather than the exception. Be sure the acetate lines up with the left-hand edge of your document to be scanned. Also clean the lens on your scanner and adjust the height of your scanner cartridge (according to your printer manual) for optimum focusing.

FRED ANDERSON
MANHATTAN, KAN.

MACDRAW II



One of the oversights in Claris' MacDraw II is the lack of a standard ruler for measuring in pixels. You can create your own custom ruler that does just this by setting the scale ratio to 1:72 inches, setting Divisions/inch to 1, and unchecking the Show Unit Name check box.

DON SAMPLE
NEPEAN, ONTARIO, CANADA

ANCIENT ART OF WAR



In Ancient Art of War, only 20 squads can be on the war map at one time. To keep your opponent from receiving any more men, you should detach squads (preferably in your forts) until the 20-squad limit is reached.

Any time a squad is wiped out, detach again to keep the 20-squad limit. This way you can gain more men, and your opponent can only lose men.

DANIEL J. LEONARD
MISSISSIPPI, MISS.

TIP OF THE MONTH

FINDER



When I have many documents in a folder, I ordinarily use the By Name option in the View menu. This lets me see more of my documents at one time, though they still have large spaces between them. To reduce the amount of space and make more files visible, I modify the Finder using ResEdit. To do this, run ResEdit and open the Finder on the disk you want to change. Double-click on the LAYO resource. Double-click on LAYO = 128. Click once on the gray part of the scroll bar. Change the number in Line Spacing from 16 to 11. Save the Finder and quit ResEdit. Now your documents will be listed in a tighter format (see Figure 3).

DAVID FIEL
CLEARFIELD, KY.

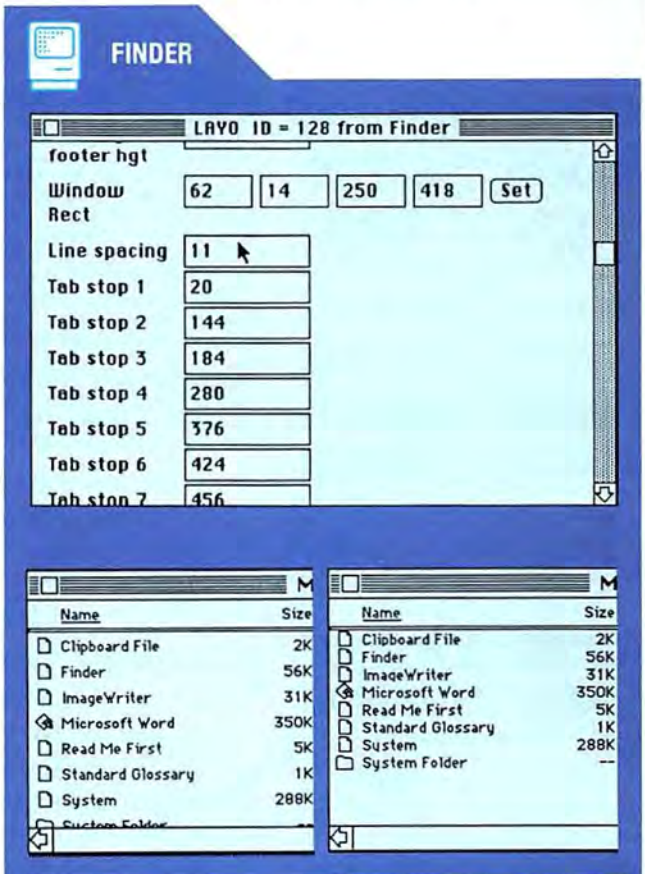
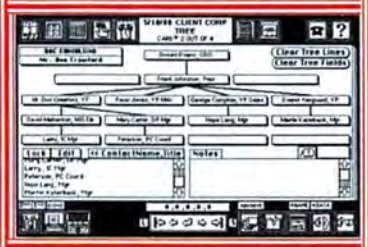
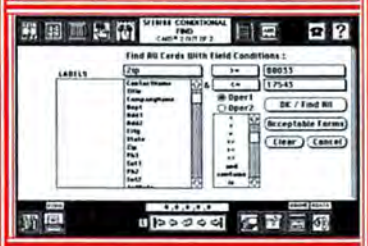


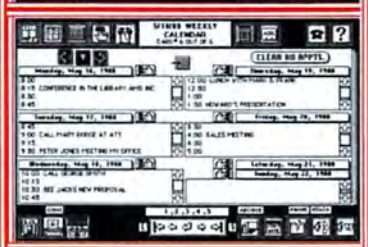
Figure 3: When viewing files by name, you'll notice that Apple has provided a generous amount of leading between lines of text. You can change the default leading of 16 with a little ResEdit magic.















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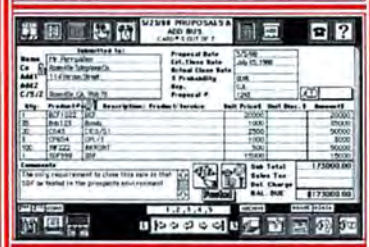














And
MANY MANY MORE

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HYPER SPACE

EDITED BY LAURA JOHNSON

Who's Albert? He's in NewsLinks this month, along with a HyperCard history of the Vietnam War and several speeding XCMDs. *The Bible* (not to be confused with *The Macintosh Bible*) comes to HyperCard in a monumental program, and another product of epic proportions, Xiphias' Time Table of Science and Innovation CD-ROM disc, is reviewed. Ponder along with Michael Swaine on the future of HyperCard in Card Tricks.

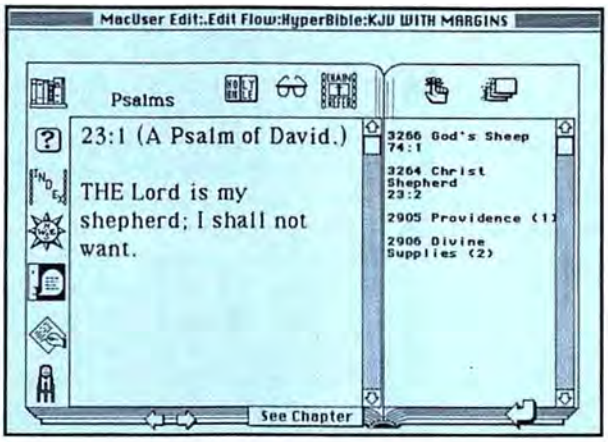


Figure 1: The psalm remains the same, but the medium is one that the 47 scholars who produced the King James' *Bible* never anticipated. The Thompson Chain Reference listings are shown at the right.

Chapter, Verse, and Card

From leather scrolls to illuminated manuscripts to the first printed book to the latest Scorcese film — the *Bible* has always remained a popular message in every medium. Now Beacon Technology of San Jose, Calif., has brought the holiest writings of the Judeo-Christian tradition to HyperCard. This is the HyperBible.

The HyperBible is designed to offer more than just a HyperCard edition of the scriptures. This is intended to be a complete Bible-study package. You get one of two versions — either the King James (great poetry) or the New International (modern scholarship). Each verse is presented on a single card, and you can use HyperCard's search capabilities on the entire text. In the case of the King James version, that amounts to 774,746 words.

In addition to the actual *Bible,* though, the program includes the *Thompson Chain-Reference Bible,* which was originally published as a

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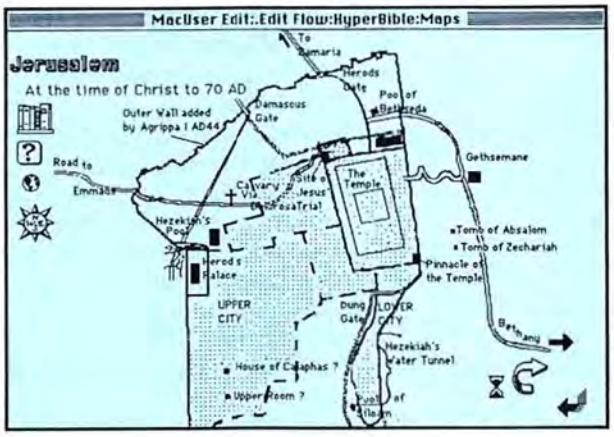


Figure 2: Maps like this one of Jerusalem in A.D. 70 are included in the HyperBible's Atlas section. The maps are indexed by the place names they contain, so it's easy to put biblical locations in geographic context.

If you have HyperCard tips you'd like to share, send them to Hyperspace, c/o *MacUser*, 950 Tower Lane, 18th floor, Foster City, CA 94002.

conventional reference book. It's a detailed index of topic-related scripture references and, in this electronic version, is integrally linked with the King James edition or New International text (see Figure 1).

HyperBible has no shortage of extras. A pronouncing aid contains digitized enunciations of the more difficult-to-pronounce names of the *Bible*'s dramatis personae (do *you* know how to pronounce *Zelophehad?*). An atlas displays maps of the Holy Land (see Figure 2) and, as in the original *Thompson,* archaeological, geographic, and biographical information is abundant. Other features, such as the Christian Worker's Tools, are more evangelical than scholarly.

These features have their price, of course (sorry, the Gideons have yet to realize the possibilities of hypertext). The HyperBible itself costs $229.95 for the King James version and $279.95 for the New International, but that's just the beginning. Including HyperCard itself, the program needs 15 megabytes of disk space. The program comes on 11 floppy disks, with a customized installation program built around StuffIt. You can't install just part of the program, so you'd better have 15 spare megabytes before you start. Technical support is provided free to registered users, and annual upgrades are priced at $50. For more word on the Word, contact Beacon Technology, 3550 Stevens Creek Blvd., P.O. Box 9872, San Jose, CA 95157; (408) 296-4884.

— James Bradbury

War and HyperCard

The Vietnam War is the subject of a new type of history book, an electronic volume written in HyperCard format. This freeware stack — created by history teacher Paul Gabel — contains researched information on the most misunderstood war in American history.

Unlike the usual history textbooks, The Vietnam War: A HyperCard History Book, version 1.2, delivers detailed information in an easy-to-read style. The cards in the stack are all interconnected, letting readers learn about the war in any order they choose. The stack includes an index that contains three types of information — Chronological Events, General Topics, and Personalities as well as a listing of maps and charts. By clicking on any one of the headings, the reader will be able to choose from a variety of different themes (see Figure 3). For instance, you'll learn how Vietnam's problems started as early as 1946.

In addition to the text, the Vietnam War contains multifeatured maps and animated charts. Both give statistical information about different areas of the war and the United States' involvement. For specific information about an area of Vietnam, you click on one of the dots found on the map, and detailed information appears.

The animated charts give the reader statistics, such as how many troops the U.S. sent throughout the war and how many people died in Vietnam as compared with other wars. A click on any word in all capitals in the text transports the reader to the card containing detailed information on the subject.

To receive a freeware stack, just send a blank disk and SASE to Paul Gabel, 377 Collado Drive, Scotts Valley, CA 95066; (408) 438-5791.

— Michele Stokol

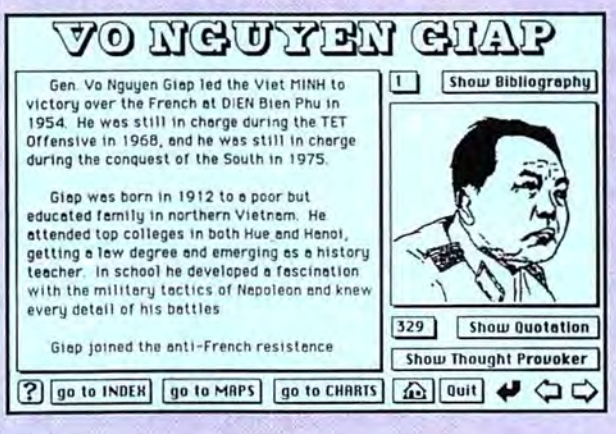


Figure 3: Giap is one of the many personalities featured in the Vietnam War stack. Words in all capital letters lead to related information.

Who's Albert?

Cars fly and computers talk back in this Disney remake of *The Absent-Minded Professor*, which premiered in November on The Wonderful World of Disney. This version stars Harry Anderson of "Night Court" fame and his friend Albert. You say you don't remember Albert from the original film? That's because Albert is a cute little cartoon character created by Anderson on a Macintosh. Albert is reminiscent of his Einsteinian namesake, appears on an SE screen in the professor's laboratory, and plays the Dean Martin straight man to Anderson's bumbling Jerry Lewis.

Of course, cartoon characters are not new to television, so why does this make HyperCard news? Albert is no ordinary cartoon character — he's a computer program created in a HyperCard application called HyperAnimator from Bright Star Technology. HyperAnimator lets you coordinate images and sounds to create talking heads (see Figure 4). You simply type the words you want your "actor" to say, and HyperAnimator converts the text into speech, with the actor's mouth movements synchronized to the words.

HyperAnimator received four mice in our February review, and the release of version 1.5 made it even better. This version has nine actors (version 1.0 had eight) with 16 expressions each. And it makes it easier for you to create your own characters using its clip-art collection of noses, eyes, ears, and so on. HyperAnimator 1.5 is also compatible with MultiFinder and the Mac IIx.

Things To Do, People To See, Places To Go.

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William Correll, vice president of marketing at Bright Star, says that the people at Disney Studios like HyperAnimator because they can change the script, and the character automatically says the new text — thus avoiding an expensive reanimation process. Disney keeps asking for more features, and the folks at Bright Star are working feverishly to give them what they want. So look for bigger and better things soon.

HyperAnimator's biggest limitation has been its reliance on MacinTalk. Though Anderson originally wanted Albert to speak with a MacinTalk voice, Disney didn't like the results. Consequently, Albert's lines were overdubbed by a human and then distorted to sound like a more comprehensible version of MacinTalk.

Bright Star is also planning to release an E-mail package called HyperMail that will feature an actor that speaks your messages. It should be out by the time you read this. Is that Knowledge Navigator I see on the horizon?

For more information about HyperAnimator and other Bright Star products, contact Bright Star Technology, Inc., 14450 N.E. 29th, Suite 220, Bellevue, WA 98007; (206) 885-5446.

— Laura Johnson

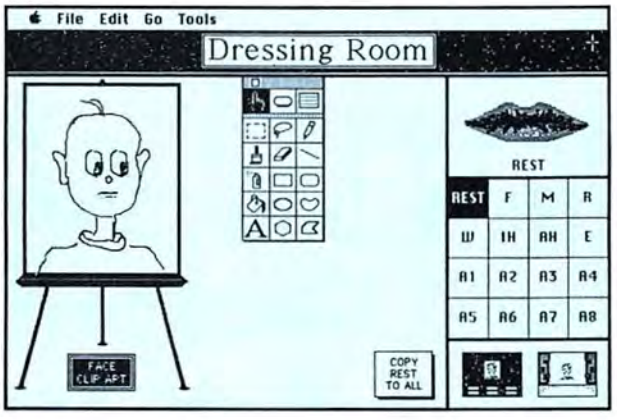


Figure 4: You create HyperAnimator actors in the stack's Dressing Room. My actor was easily created using local talent, with the mouth chosen from the HyperAnimator clip-art selection to get its 16 positions.

The Search Is On

HyperCard's search capabilities (or lack thereof) have been listed as one of its weaknesses since it was first introduced. The Find command is limited to one stack and is tediously slow when searching large stacks.

HyperSearch, by Discovery Systems, is a set of external commands that speed up the search process and enable you to search any number of stacks (see Figures 5 and 6). HyperSearch may be installed in your home stack (from which all stacks can be searched), or it may be applied to one stack at a time. When installed, HyperSearch appears on the menu bar. Its functions include Find, Find Next, and Find Previous.

You can create an index to conduct searches. Just tell HyperSearch which stacks to create an index for and what types of fields (background, types of backgrounds, card fields, etc.) to index. It is this index that HyperSearch uses to find what you are seeking. When the search is finished, HyperSearch tells you how many times the target occurred.

You can use HyperSearch as it comes or create your own hypertext scripts to customize some of the hypertext handlers.

HyperSearch retails for $99.95 from Discovery Systems, 7001 Discovery Blvd., Dublin, OH 43017; (614) 761-2000.

— Laura Johnson

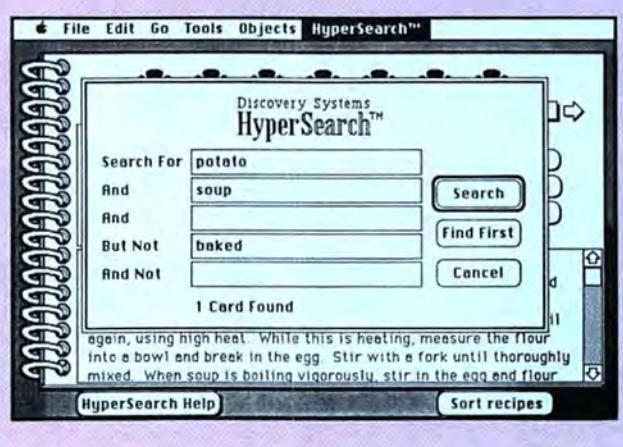


Figure 5: In HyperSearch's dialog box, you can tailor a search to your needs. For example, rather than find all references to *potato*, you can go straight to *potato soup*.

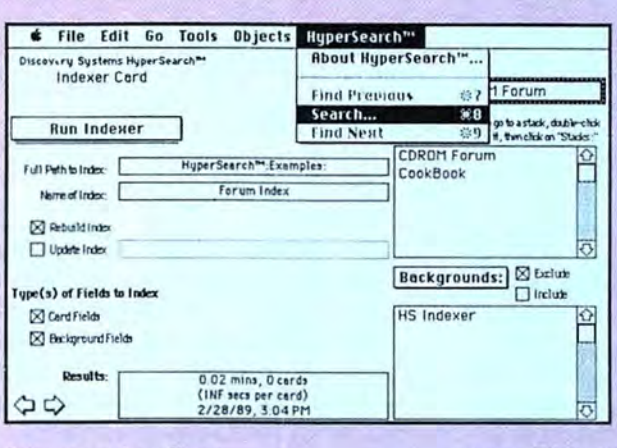


Figure 6: Launch HyperSearch from the Home card or from the menu bar as shown here. You can choose to index card fields or background fields, or both.

Faster than a Speeding XCMD

When auditors at Arthur Young & Co. balked at searching through paper files, the Big Eight accounting firm turned to KnowledgeSet for a HyperCard alternative. KnowledgeSet packs all of Arthur Young's client records onto a CD-ROM optical disc and uses HyperCard to index the database. An Arthur Young director says it now takes "just two seconds to find the same data" that previously took four hours. The system works so well that accountants now take their Macs and an AppleCD SC CD-ROM player with them on the audit trail.

An Arthur Young director says it now takes seconds to find data that previously took hours to find.

KnowledgeSet catalogs a company's information with HyperIndexer and then searches for it with HyperKRS, a highly enhanced retrieval mechanism for HyperCard. What might take HyperCard's Find function over two minutes to locate takes only two seconds with HyperKRS. HyperKRS adds not only speed but agility in searching for information, using options like Boolean operators (AND, OR, BUT NOT).

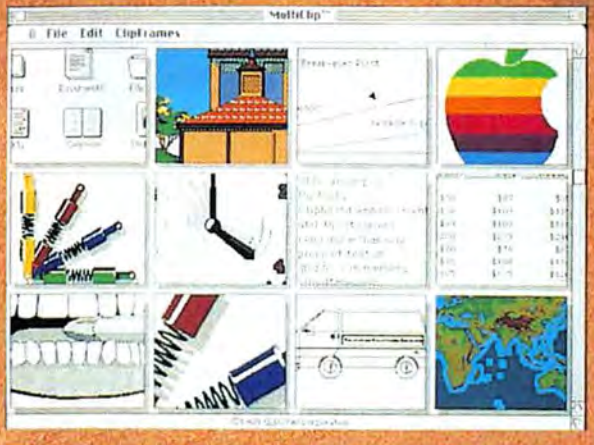
KnowledgeSet's solution is so packed with power that it's being used by other companies. Maxwell Data Management put its reference manual for the Boeing 757 — 18,000 pages of text and graphics that weigh in at 140 pounds — onto a CD-ROM disc. Information Handling Services transferred its Personnel database of the Federal Personnel Manual onto CD-ROM and reports that it's seven times faster than the microfiche version, which is seven times faster than a hard-copy search.

KnowledgeSet's starter system, including HyperIndexer and ten HyperKRS discs, sells for $3,000. Engineering support is provided by KnowledgeSet. Purchasers can set up their own databases or have custom programs developed for them. Contact KnowledgeSet at 888 Villa St., Mountain View, CA 94041; (415) 968-9888. A demonstration disk is available free of charge.

— *Laura Johnson*

"I can't imagine working without it anymore" Steve Bobker, MacUser

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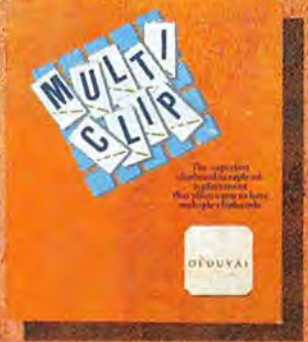
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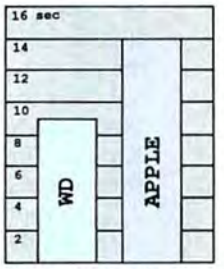
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Time Table of Science and Innovation

Galaxies and stars rush past. A soft sound tugs at the hem of your awareness, growing rapidly to an overpowering electronic om. As you plunge to Earth only to be yanked in through an office window in Marina Del Rey, a voice that could almost be Rod Serling's invites you to "witness the glory—and the folly—of man."

In this way you are drawn into that black hole of technophilia, the Xiphias Time Table of Science and Innovation CD-ROM disc.

The product is the brainchild of Peter Black with editorial work by Susan Black, Peter Black, and Hugh Esten; programming by Bill Fancher; and digitized imagery by Stephen Burr. The product's name suggests that it is patterned after Bernard Grun's *The Timetables of History* (Touchstone Books, Simon & Schuster, New York, 1982), that Black intended it to be something like a hypertext version of what that book undertook. But Black has drawn from a rich set of sources, only one of which is Grun's book.

The Xiphias Time Table of Science and Innovation is implemented as an integrated set of HyperCard stacks on CD-ROM, presenting events from the history of technology. The main body of the Time Table is over 500 cards, each of which details a historical event. From one of these cards the reader can branch to a variety of related kinds of information or to related cards. If events have some significance in a broad category like politics or medicine, a recognizable icon indicates this, and clicking on the icon takes you deeper into that category. The fast and flexible Search command makes user-directed branching particularly easy.

Several hundred scanned-in pictures let you see the devices described in text, and several pictures also have an associated sound. ("Listen to the sound of a Blanchard gunstock lathe.") The most powerful use of visual information may be the simple world map that you can jump to, to see where the event described took place. One trivial but surprisingly effective use is in the bibliography, where Burr has included scanned-in covers of the books cited. The bibliographic entries are striking.

Other stacks and modes for accessing information are nicely integrated with the Time Table cards, notably a time line that places historical events graphically in their temporal perspective, and a periodic table of the elements.

The Xiphias product was painstakingly designed and is really a model of how to integrate multimedia information in a richly linked information base. Navigation through the stacks is remarkably easy. The design encourages the user to range fairly freely through the information, has few dead ends, and usually provides a variety of kinds of links from any given point. The presentation of information is attractive, consistent, and effective, with links to other kinds of information always clear but subordinate to the information currently being presented. The integrated Help system couldn't be easier to use, and it seems to cover all of the bases.

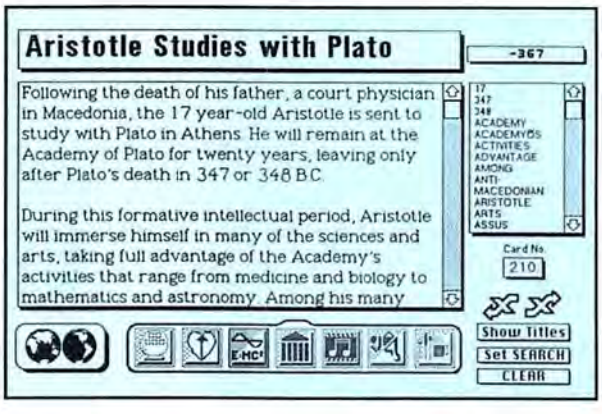
Although the linking of information is rich, the depth of the individual items is not great. Most entries consist of a sentence or two, and the selection is somewhat eccentric. (I would not have included the home yogurt maker, for example.)

In performance, CD-ROM products have to measure up to professional software standards. The price of discs and the fact that bug fixes require a new disc take CD-ROM stacks out of the tolerant stackware market. I found some minor bugs in the HyperTalk code of the Xiphias product, but there was nothing more serious than a typo in the Periodic Table stack script that has, if anything, only a cosmetic effect.

There are some signs of casualness, though, in finishing off the code. The supplied Home stack contains inappropriate path names in the path cards. Most of the stacks were not compacted (the Periodic Table stack takes up 252K and could easily have been reduced to 44K), and the scripts have commented-out code, plus live code that is meaningless on CD. These things may be there for developer use; in any case, most probably have no appreciable effect on performance. Still, reading from CD-ROM is so slow that developers should take special care to avoid slowing the process down unnecessarily.

But the big question I can't dodge is, is this hypermedia? Does it deliver on the promises of richly linked hypertext with integrated graphics and sound?

Hypermedia, to justify its existence, has to deliver what can be delivered in an equivalent mass of print and then some. I really don't think that the Xiphias Time Table of Science and Innovation measures up to



This entry for Aristotle is more extensive than most. From here you can examine other entries for Aristotle or follow chronological or topical links.

that criterion.

I have on my shelf *The Timetables of Science* by Alexander Hellemans and Bryan Bunch (Simon and Schuster, New York, 1988). The book contains no illustrations, just 600 pages of items much like the items on the Xiphias cards. The organization of the book is chronological, in parallel columns for different sciences. There are two indexes. The book has a much simpler structure than the Xiphias Time Table of Science and Innovation, and lacks the pictures and sound. Nevertheless, it has, by my estimate, about 30 times as many text entries as the Xiphias product, and it costs about one-tenth as much.

I think it is its lightweight nature that leads the Xiphias product into overcondensed summaries such as a two-sentence argument that the invention of the printing press led inevitably to the discovery of the Americas. James Burke can pull these things off, but not everyone is James Burke.

The Time Table of Science and Innovation CD-ROM disc is not James Burke, but it is a fascinating product and a useful tool for exploring links in the history of technology. It would be a mistake, though, to view it as a substitute for a real reference book such as the Hellemans and Bunch work. It simply lacks the weight of information.

— *Michael Swaine*

Time Table of Science and Innovation

3½

List Price: $150
Published by: Xiphias, 13464 Washington Blvd., Marina Del Rey, CA 90292; (213) 821-0074.
Requires: 1 megabyte RAM, Mac Plus or higher; HyperCard version 1.2 supplied.
Compatibility: MultiFinder friendly.
Copy Protection: None

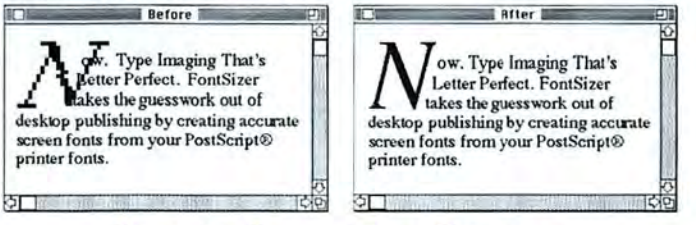
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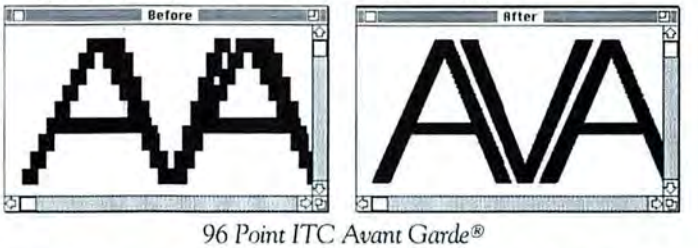
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Bullish on the Stack Market



An editor for another computer magazine asked me to write an article on the future of HyperCard. A conference organizer asked me to conduct a workshop on developing HyperCard stacks. Having time for only one, I turned down the article and accepted the workshop. That was dumb.

I didn't see immediately that it was dumb. About halfway through outlining the workshop, I realized that I couldn't talk to people about developing stacks without answering a fundamental question, at least for myself. Apart from Focal Point author Danny Goodman, I couldn't think of anyone who was making a living creating HyperCard stacks. The stackware market had developed pretty much as several pundits had predicted that it would; which is to say, it looked a lot like the macro market for Lotus' 1-2-3. So the question was, why develop stacks?

The answer was that HyperCard is not just, or even primarily, a mill for grinding out stackware. People are doing some very significant things with HyperCard, things that have nothing to do with stackware. You should learn how to develop HyperCard stacks, I imagined telling my audience, so that you can be involved in the exciting new uses to which HyperCard stacks are being put and will be put in the near future. Uses like....

HyperCard is really an interface you can graft onto just about anything remarkably easily.



By Michael Swaine

And there it was, staring me in the face. To teach people how to develop stacks, I had to explain why they would want to develop stacks, and to explain that, I had to tell them what HyperCard was going to be used for in the future. I had to write the article to plan the workshop.

So I did, and this is it. Here are the major uses to which I see HyperCard being put in the next year and beyond.

The Universal Interface: The chairman of the board of the Independent Apple Dealers Association recently told his dealers to expect demands from their customers for HyperCard front ends to mainframe systems. The customers can expect to see many such interfaces. You can expect HyperCard to be used as an interface to just about everything. That, in fact, is mostly what HyperCard is: an interface that can be grafted onto just about anything remarkably easily. It's very appealing to the keepers of such beasts as mainframe databases to be able to provide a simple, customizable, recognizable means of access to their beasts for Mac owners. It's particularly nice if the means of access is free and supported by the manufacturer of the hardware, and if all they have to do is write a few external commands and functions to map the HyperCard user interaction onto their model of a transaction.

The Multimedia Interface: You may have noticed recently that you could hardly walk into a computer store without being bombarded with Apple's multimedia pitch. Apple is serious about multimedia applications. I think Apple ought to be, for the reasons detailed in the March issue of this magazine.

If HyperCard is a logical front end for mainframe access, it's even more logical as the multimedia interface. Not only does it provide a familiar interface and a straightforward way of controlling devices such as CD-ROM drives, but its hypertext links extend naturally to hypermedia links, allowing the user to blaze trails among diverse kinds of information.

Bill Atkinson's Demo Program: Although HyperCard is not itself an application-development language, it can be used to develop prototypes of application programs. Because HyperCard can simulate most effects that can occur on a Mac screen, a developer can use it to put together a prototype of a program in days. The benefits are having early feedback on design, early identification of conceptual errors, and something tangible to show to potential investors. Programmers know how important prototyping is, and they know that the Mac didn't have a good prototyper until HyperCard came along.

There are now some good prototyping tools that go beyond what HyperCard can do. But developers need a rich variety of tools, and HyperCard's ease of use argues for keeping it in the toolbox along with the prototypers. I expect HyperCard's greatest contribution in application development to be in creating quick prototypes.

The Hypertext Manual: The real proof that it's HyperCard's interface that matters is Symmetry's HyperEngine. HyperEngine is a tool that lets software developers incorporate many of HyperCard's features into their applications. HyperEngine grew out of Symmetry's HyperDA, the desk accessory that allows access to HyperCard stacks without HyperCard (and without a megabyte of memory). HyperEngine allows developers to fold this same functionality into their applications.

ILLUSTRATION JIM LUDTKE

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Claris is among the companies that have licensed HyperEngine so that they can provide on-line documentation in the form of HyperCard stacks. That's a HyperCard-developed, HyperEngine-mediated stack that documents the new features in MacWrite II. The user gets the HyperCard interface without HyperCard.

The Simulator: Computers won't solve the enormous problems in American education, but computers in the hands of many people will democratize the proc-

HyperCard is a particularly good tool for developing educational software because it makes it easy to show, rather than just to tell. Besides, it's free.

ess of searching for solutions. I believe that HyperCard is a particularly good tool for developing educational software for two reasons. First, it encourages the use of hypertextual links that can make learning more interactive and student-directed. Second, it makes it easy to show, rather than just to tell (which is also why it's a good prototyping tool). But the real reason to think that it will be heavily used in developing educational software is that it's free.

The Liberator: Finally, I'd tell the students in my workshop, you can and should write stacks for yourself. While the macro market for Lotus' 1-2-3 may be scoffable, 1-2-3 macros are not; they have saved many hours of work for many people. HyperCard is a more powerful tool than 1-2-3 macros. By providing you with the ability to develop simple tools for your own needs, HyperCard has taken a lock off the Macintosh. But keep in mind that the stackware market is not really what HyperCard is all about. HyperCard's chief virtue is in opening up the machine, not markets.

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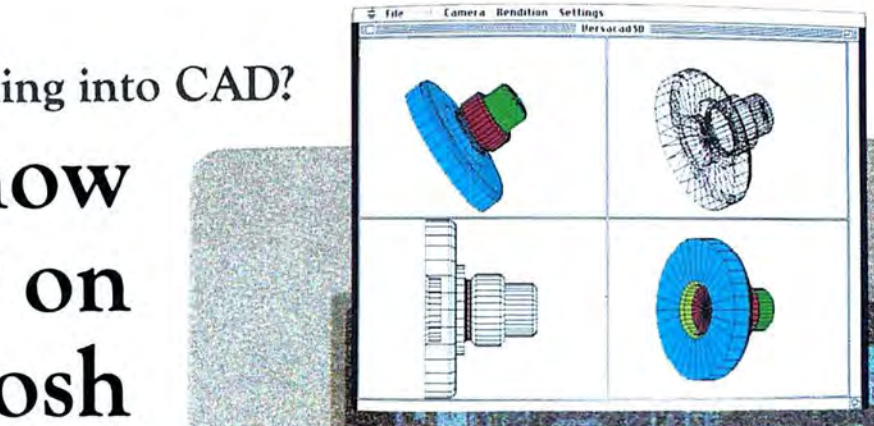
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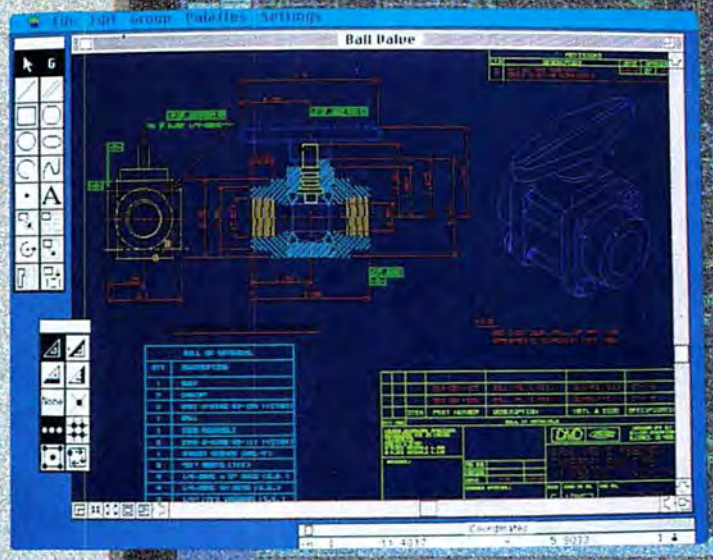
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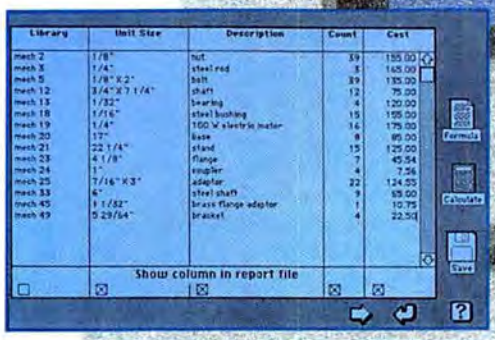
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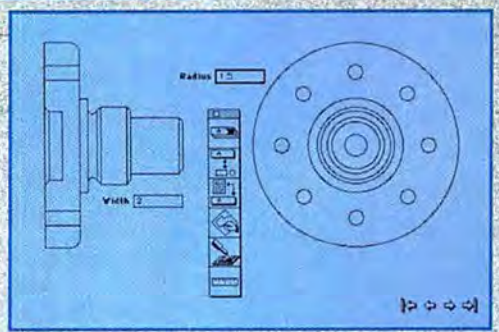
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EDITED BY LAURA JOHNSON AND VICTORIA JUAREZ

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Many of today's children are still playing with blocks; but others have graduated to the Macintosh, and the stacks they're playing with are HyperCard stacks.

This month, Flash Cards features stacks for preschoolers and beyond — the up-and-coming generation of Mac users. They provide a sampling of how the Mac and HyperCard have combined animation, digitized sound, and music to create an exciting, interactive entertainment and learning environment for your child.

You can find the shareware and freeware stacks on bulletin boards. Commercial stacks are available at your local software emporium.

If you create a stack that you think others will be interested in, send it to Flash Cards, c/o *MacUser,* 950 Tower Lane, 18th floor, Foster City, CA 94404. We can't promise to show your stack and we can't return your disk, but we might make you famous.

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Animal House





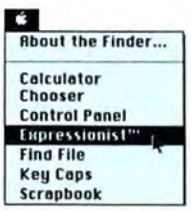
Learn an interesting fact about each animal presented on At the Zoo, a stack geared to children from 3 to 7. At the Zoo was written by teachers David Kreisberg and Marlene Sweger both to reinforce reading skills and to inform nonreaders. It's available on BBS or by writing David at 8315 Canning Terrace, Greenbelt, MD 20770; $10.

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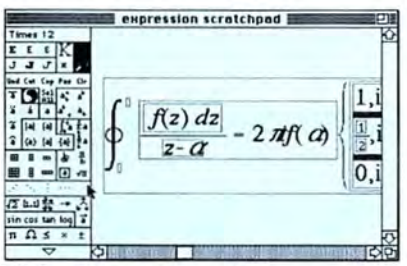
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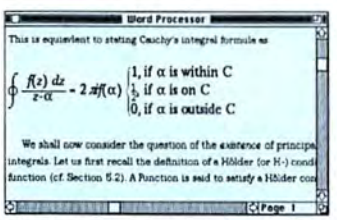
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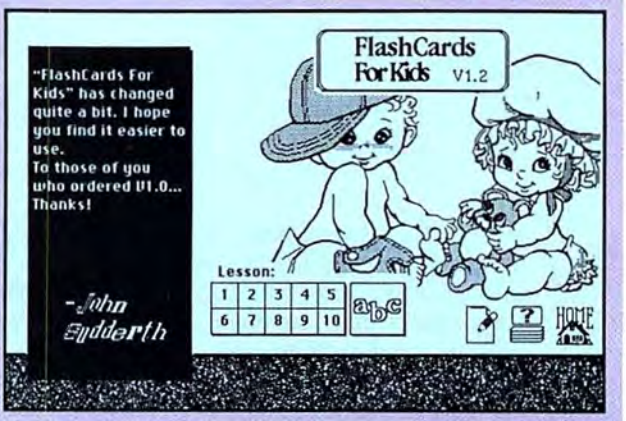
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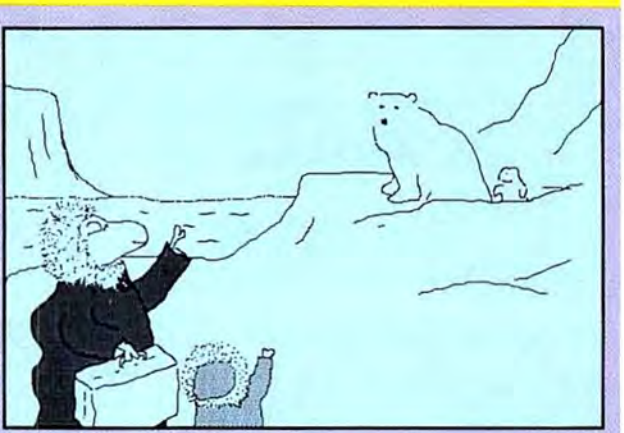
This stack is for the crib set. Help your child learn to read using FlashCards for Kids, which includes the ABC's, words, and short sentences. Make your own lessons with the customizing option. FlashCards for Kids is by John Sudderth and available from Heizer Software, 1941 Oak Park Blvd., Suite 30, Pleasant Hill, CA 94523; (800) 888-7667; $12.

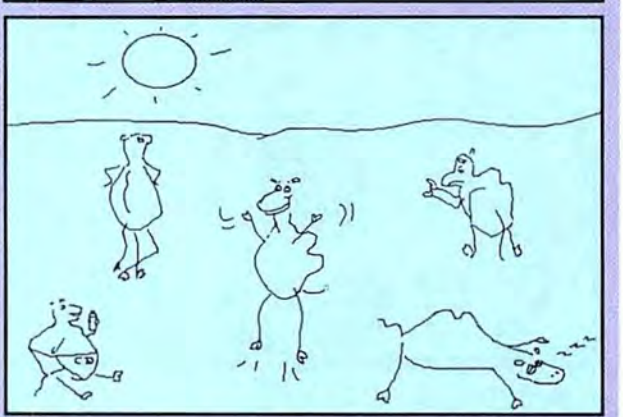




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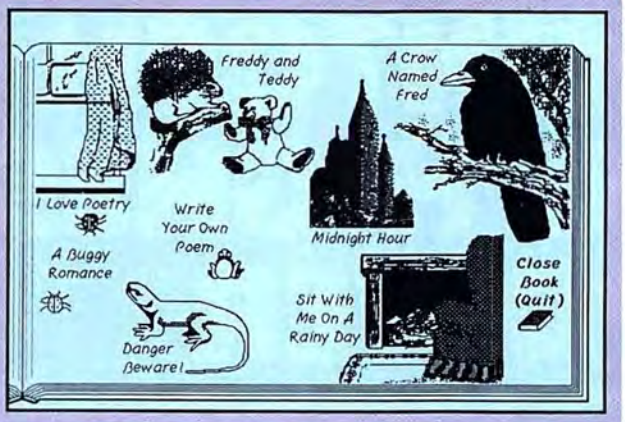
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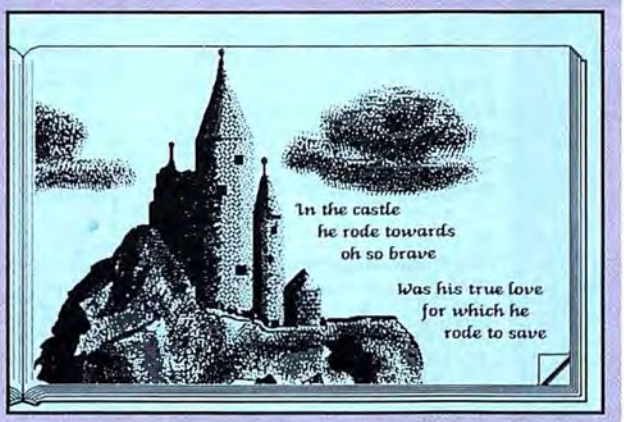
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Poetry In Motion

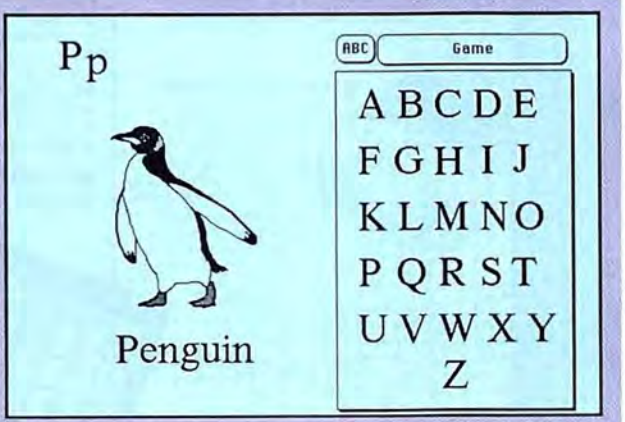
Words come to life in this collection of seven poems by Sharon Newby, age 14. Some words reveal animated secrets, others act as buttons to transport you magically to another scene. There's a clock that teaches kids how to tell time, a poem that stresses the value of signs, and a place for your child to create a rhyme. My First Book of Poetry is available for $29.95 along with a second selection, The Dream Called Storm (see Flash Cards, October '88). Call or write B & B Soundworks, P.O. Box 7828, San Jose, CA 95150; (408) 241-7986.

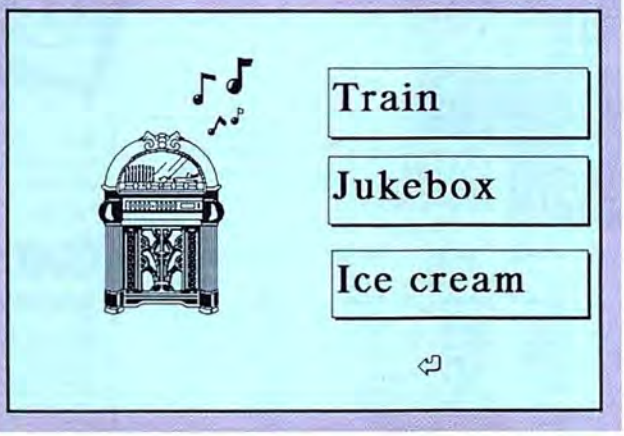




A, B, See and Spell

The hammer hammers, the zipper zips, and the penguin dances in the Alphabet Pictures learning stack, which incorporates animation, sound, and music to teach your child the ABCs. It also features a word/picture recognition and association game and word spelling with a sound and a picture for each word and letter. Alphabet Pictures was created by Clay Nixon for his two-year-old son. It is available for $25 by writing to him at 3911 Elmwood Ave., Louisville, KY 40207 (specify whether you have a Plus, SE, or Mac II).





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Form Factor	3½"	3½"	5¼"HH	5¼"HH	3½"	3½"	5¼"HH	5¼"HH	5¼"FH
Formatted capacity	**21.3Mb**	**42Mb**	**112Mb**	**152Mb**	**21.3Mb**	**42Mb**	**112Mb**	**152Mb**	**325Mb**
Average access	**68ms**	**28ms**	**17ms**	**17ms**	**68ms**	**28ms**	**17ms**	**17ms**	**16ms**
MTFB(POH)	20,000	30,000	35,000	35,000	20,000	30,000	35,000	35,000	30,000
Data Transfer per sec.	5.0Mbit	8.0Mbit	10Mbit	10Mbit	5.0Mbit	8.0Mbit	10Mbit	10Mbit	1.25Mbit
Internal Mounting	NO	NO	NO	NO	+,SE,II	+,SE,II	II	II	II
Low Profile External	YES	YES	YES	YES	NO	NO	NO	NO	NO
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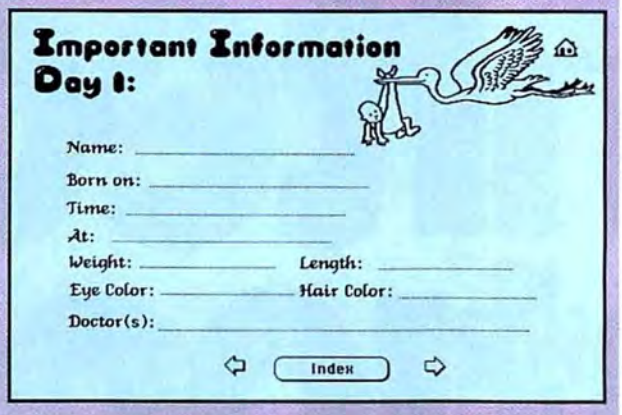
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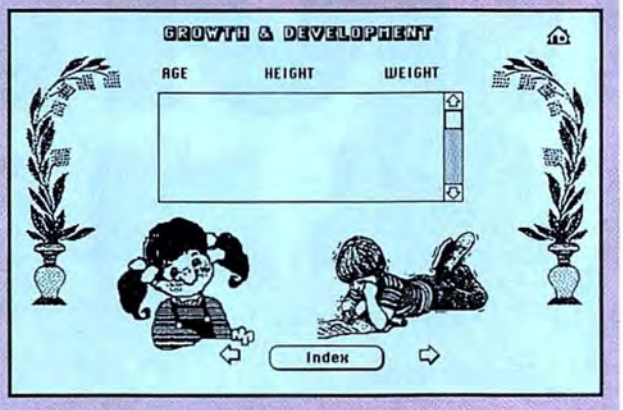
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V. I. B.

Let your very important baby be one of the first on the block to have his/her vital statistics recorded on this electronic baby book. Keep track of your little one's happenings from birth to two years, including health records, family tree, and first time on the Mac. This HyperCard Baby Book was created by Roz Schwartz.

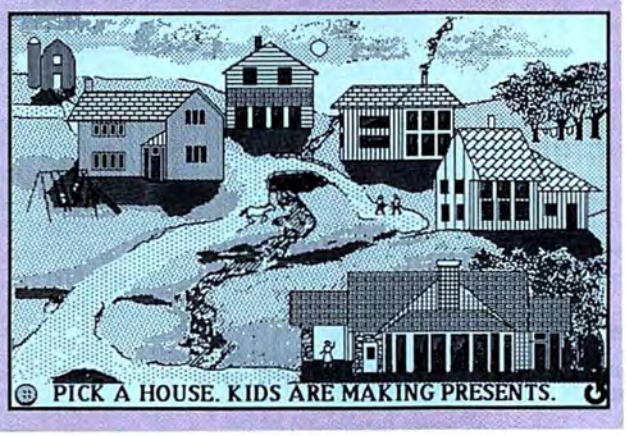




It's a Party!

It's a birthday party, and Adam, Anna, and Tom are getting presents ready for their favorite neighbor. This stack uses sound and graphics to create fun and educational activities for children. It includes stories, games, and a spelling section with three different levels. Happy Birthday is available from Actreo Software, 741 E. Gorham St., Madison, WI 53703; (319) 382-3998; $39.95.





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If your business is using AppleTalk networks, then you're ready for the next big advance in office communications.

Introducing Timbuktu, the new application for your network that lets you access and share resources. It's just what you'd expect from the people who brought you the PhoneNET System.

Granted, the name is a little unconventional. But the time and money Timbuktu saves will appeal to even the most conservative minds.

Install Timbuktu on each Macintosh, and everyone on the network can access other Macintoshes, share screens, and control the operation of each other's computers. In fact, you can access your own computer from another computer on the network. (Our companion product, Timbuktu/Remote, works the same way over modems.)

So, if you're the one who's always fixing things on the network, helping solve computer puzzles, and other office heroics, then leave your running shoes at home.

Now, you can identify problems on any Macintosh, reconfigure or update software, teach people new applications, or manage servers and other shared resources. Right from your own Macintosh. Or any other Macintosh, for that matter.

For those pressured with meeting the demand for more computing power, while justifying the cost to management, Timbuktu offers a profitable solution. And relief.

Timbuktu lets everyone access any workstation and its databases, FAX modems, print spoolers, servers, and mainframe connections. If you're concerned about security, the password protection feature will limit access to any device. You can also use Macintosh IIs as servers without buying keyboards, monitors, or video cards.

Timbuktu. What we're talking about is people working together, sharing resources, and helping each other get the job done. Only now you can do it over the network, with united stations. To find out more about Timbuktu and the rest of the PhoneNET System, call (415) 849-2331 for the Farallon dealer nearest you.

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EDITED BY HENRY BORTMAN

BRIDGES

CONNECTIVITY • SYSTEMS • WORKSTATIONS • INTERFACES

This month the big news is the Macworld Expo. You're probably thinking the Washington show, but we're talking San Francisco. Those three-month lead times get you every time.

Trouble Shots walks you through Chapter 2 of wire woes. A/UXiliary Information takes a look at Emacs.

If you're looking to make connections in this issue, flip through the rest of the magazine. Our MacUser Labs report tells you how to set up a file server on a small network. The testing was done in our new NetWorkShop, which you'll be hearing more about in future issues. We also offer a detailed look at dial-in connections to AppleTalk networks, and some background on Apple's AppleTalk Filing Protocol (AFP).

By the way, we're always looking for new authors, especially if you have experience with, and access to, Macintosh-to-mainframe connectivity. (We will also graciously accept donations of spare mainframes.)

If you're interested in contributing or if you have tips, techniques, or comments, drop us a line at Bridges, c/o MacUser, 950 Tower Lane, 18th floor, Foster City, CA 94404.

Oracle for Macintosh

This long-awaited product finally shipped and was even being sold on the floor of the Macworld Expo (for $99 a shot, no less). Oracle is the most widely used SQL relational database around. It runs on some 80 different machines and operating systems, over practically any kind of network. Small wonder Apple wanted to see Oracle provide a Macintosh port of entry.

What you get for $199 (the price for the stand-alone product, now that the show's over) is a single-user "local" version of Oracle. I may seem to be contradicting myself, after having just praised its ubiquity. But this stand-alone version is a complete development environment that enables you to create Oracle-compatible applications. When you port these applications to other machines running Oracle, so the vendor claims, they will simply *work* — as networked, multiuser applications. And, since Oracle SQL follows the ANSI standard, Oracle for Macintosh applications will also work, without modification, with IBM's DB2 and SQL/DS databases. (To make the network connection, you need the $999 version of Oracle for Macintosh.) Oracle for Macintosh comes with a set of HyperTalk XCMDs that make it easy to write HyperCard front ends to SQL databases (see Figure 1). Oracle has also announced compatibility with ACIUS' 4th Dimension and is working with other Mac database vendors to allow their products to access Oracle databases. It will work with CL/1 too, when it finally ships.

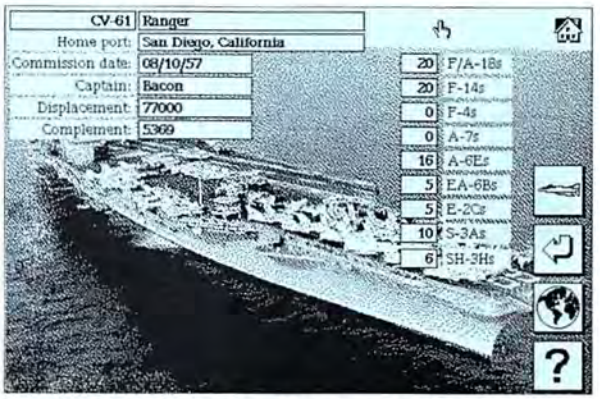


Figure 1: Oracle for Macintosh provides a HyperCard XCMD that allows users to write Oracle/SQL database applications with HyperCard front ends. This demonstration stack was developed for the Navy to access the database that tracks its ships and planes.

For now the Mac (under the Macintosh operating system) can act only as a workstation in an Oracle distributed database system. In other words, you can store some of your

data in a local Oracle database on the Mac workstation while accessing other data from other, non-Mac, machines on the network — but the other machines can't access the data on your local Mac database. This will become possible only when Apple ships a true multitasking operating system for the Mac.

Timbuktu Remote

Timbuktu brought a new slant to workgroup computing when it was released last year. Macintosh computers with Timbuktu installed can observe and control each other's screens over an AppleTalk network, which has many applications. It allows a group of people to work on a single document simultaneously, so that when any one participant revises the document, all other participants can instantly view the changes. Network managers can use Timbuktu to control a "headless" AppleShare file server — a Mac II without a keyboard, video card, or monitor — from their own desk. We use it in a similar way in the *MacUser* NetWorkShop, where we don't have room for monitors for all our Mac IIs. We just stack them up and Timbuktu them, using a single monitor.



Figure 2: Farallon's Timbuktu Remote extends the screen-sharing capabilities of Timbuktu to users connected remotely to an AppleTalk network over a dial-up line. Each user can create an address book of remote sites that can then be dialed with a mouse click.

If you've seen Timbuktu work, you've probably wished you could use it remotely over phone lines. Other solutions (Liaison and NetModems, for example) let you dial in from home and become a node on the AppleTalk network at work. You have access to the network resources and to the files on your home computer but, unless you're running TOPS, you aren't able to get at the files on your work computer.

Timbuktu Remote removes this barrier. When installed on both ends of a dial-up connection, it lets you control another Macintosh directly over phone lines (see Figure 2). It handles both the dial-up connection and the remote screen control. No special hardware is required — just regular old modems (although 2,400 baud gives pretty sluggish performance; Farallon recommends 9,600).

This would be enough to make a great product, but Timbuktu Remote offers more. It lets you transfer files between connected computers. Stuck at home but need a file from work? No problem with Timbuktu Remote. Just call up and send it to yourself. Previously, to pull off a trick like this, you would have needed two copies of TOPS, one on each end, plus dial-up hardware and/or software. And you wouldn't have had the remote screen-control ability that Timbuktu Remote offers.

Worried about security? First you can set a password that other users must know in order to dial into your machine. Unfortunately, anyone can sneak onto your machine when you're not looking and change your password without knowing the old password, thereby granting themselves unauthorized access to your machine. You can also use security settings to restrict the type of access to your machine, such as the right to observe but not to control your screen, or to read files from your disk but not to write files to or delete files from it. (Unfortunately, again, you don't need to know the password to access and modify these security settings.) Finally, there's a Chat feature for those times when you want to do a quick file transfer from someone else's machine but you want to let him know first.

All in all, a very handy package for $299 a node.

Blue Skies over San Francisco

Farallon also had some items on the promised list. Welcome news, but no big surprise: A future version of Timbuktu will include the file-transfer capabilities of Timbuktu Remote. It should be available in the first half of 1989 at $149 per node. A free upgrade (with proof of purchase) is available to those who bought Timbuktu after January 15, 1989, and an upgrade for registered owners who bought it earlier is $40.

More exciting but less tangible, Farallon also announced that it would release, as part of its PhoneNET system, an Ethernet StarController by the end of the year. It will allow PhoneNET users in buildings wired with twisted-pair phone wire to choose easily between connecting Macs at LocalTalk and at Ethernet speeds.

Here's how it will work. Each Mac will have a PhoneNET connector attached to it, but, instead of all the boxes being the LocalTalk PhoneNET connectors we all know and love, some of them will be Ethernet PhoneNET connectors (you'd also need an Ethernet card in your Mac or an external SCSI/Ethernet box). You'll use the same phone wire you use now to go from the wall box in your office back to the phone closet where the StarController is. But when you get there, if you're Ethernet-connected, you'll connect to an Ethernet StarController instead of the LocalTalk StarController Farallon provides today. This will make it very easy to move a Mac from LocalTalk to Ethernet. It will require only a new card in the Mac, a different PhoneNET connector, and a wire switch in the phone closet.

Similar functionality is already available with products such as Synoptic's twisted-pair Ethernet controller, but Farallon will offer an integrated single-vendor solution. It remains to be seen whether Farallon will also offer significant price competition. The company hasn't even announced when it will announce a price.

Kinetics was showing off its Lan Ranger software, the first graphically oriented network-management tool available on the Macintosh (see Figure 3). Now shipping free with every FastPath, it allows a network manager to display graphically the internet and its bridges

With MacMainFrame, it's so easy to access an IBM mainframe, a mouse could do it.

If you're like most Macintosh® users, one of the reasons you got hooked on the Macintosh in the first place is that it's so easy to use.

Which is why you'll be happy to know that now you can use any Macintosh, from the 512Ke to the Macintosh II, to access any IBM® mainframe with scarcely more than the click of a mouse.

MacMainFrame™ is a Macintosh-to-IBM mainframe link that puts your Macintosh and your mainframe on speaking terms.

MacMainFrame gives you complete Macintosh-to-mainframe functionality including file transfer.

You can access the host remotely from your satellite or home office. Or from client sites.



And because MacMainFrame builds on the flexibility inherent in your Macintosh, you can even create your own personal operating environment. With convenient features that include everything from keyboard remapping to user-definable screen colors.

In all candor, when it comes to connecting the Macintosh with IBM, no other Macintosh-to-mainframe link is as true to the Macintosh ideal as MacMainFrame.

For the authorized MacMainFrame dealer or distributor nearest you, call 1-800-289-2526, extension 27.

Or write to Avatar Corporation, 65 South Street, Hopkinton, MA 01748.

Avatar.

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Now Macintosh II users can run up to five host sessions simultaneously with MacMainFrame/DFT.

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and then, by clicking on a network, to display its AppleTalk devices, including Macs, PCs, UNIX machines, file and mail servers, and LaserWriters. A further click on a device brings up a window showing the various AppleTalk processes running within that device.

While the version shown at Macworld displayed only FastPaths and the networks attached to them, the initial shipping version will enable users to display other vendors' bridges too. Lan Ranger will automatically find all FastPaths on the internet; the network manager will have to enter manually the device types and network numbers for other bridges.

With the Mac's built-in network capability and graphical interface, graphic network-management tools seem like a natural. Hats off to Kinetics for being the first to implement one.

Avatar and Shiva announced that they would comarket the former's MacMainFrame DX with the latter's NetSerial. MacMainFrame DX is an external 3270-emulation device that connects to the serial port of a Mac on one end and a 3274/3174 controller on the other, allowing Mac users IBM mainframe terminal access. Normally, a serial device such as a plotter or modem is connected to a single Mac and therefore can be used only by a single user. Shiva's NetSerial allows such devices to be shared over a LocalTalk network by anyone on the net. By combining MacMainFrame DX, which runs $1,195 a pop, with the $395 NetSerial, tremendous savings can be realized because several users can share a single mainframe connection, rather than each user needing one. (Of course, only one user can access the MacMainFrame DX at a time.)

Shiva also announced two new products. TeleBridge ($499) is a souped-up half-bridge. When used with standard modems (it supports speeds to 57.6 kilobaud), it can be used either by an individual Mac user to dial into an AppleTalk network or to connect two distant networks and allow any user on either net to share the resources of the entire internet. DOS Dial-In ($99), Shiva's other newcomer, is the first product to allow PC users to dial into an AppleTalk network. Both products should be shipping by the time you read this.

In other 3270-related news, DCA announced a new MacIrma card, and Avatar announced a new MacMainFrame card, both for the Mac SE/30. Stay tuned for pricing and availability. Tri-Data unveiled plans for a new high-performance LocalTalk-to-mainframe gateway product, Netway 2000. Based on 10 MIPS SPARC technology, Netway 2000 will be capable of supporting 64 simultaneous SNA 3270 sessions, two LocalTalk connections, an expansion bus for Ethernet and Token Ring boards, and 56-kilobit-per-second connections to IBM SNA hosts. Netway 1000, currently shipping, supports 16 sessions.

Debuting in the mail department was cc:Mail for Macintosh. cc:Mail claims that its mail product is the leader for PC-based LANs. Expected to ship in April at $69.95 per node, with site licensing available, this one could give the big three — Microsoft Mail, QuickMail, and InBox — a run for the money, despite the fact that you have to run the server software on a DOS machine.

And finally, Insignia Solutions announced version 1.3 of SoftPC, which will support Apple's new FDHD drive as a PC disk drive. Users of Macs equipped with this drive will no longer need an external Apple PC 5.25 or DaynaDrive to read and write to DOS disks (as long as those disks are of the 3.5-inch variety). Version 1.3 also offers bidirectional cut-and-paste between Mac and DOS applications. And a 2-megabyte machine can give you the same performance that used to require 4 megabytes. The price is $595 (the same as before); a $49.95 upgrade is available for registered owners of any previous version.

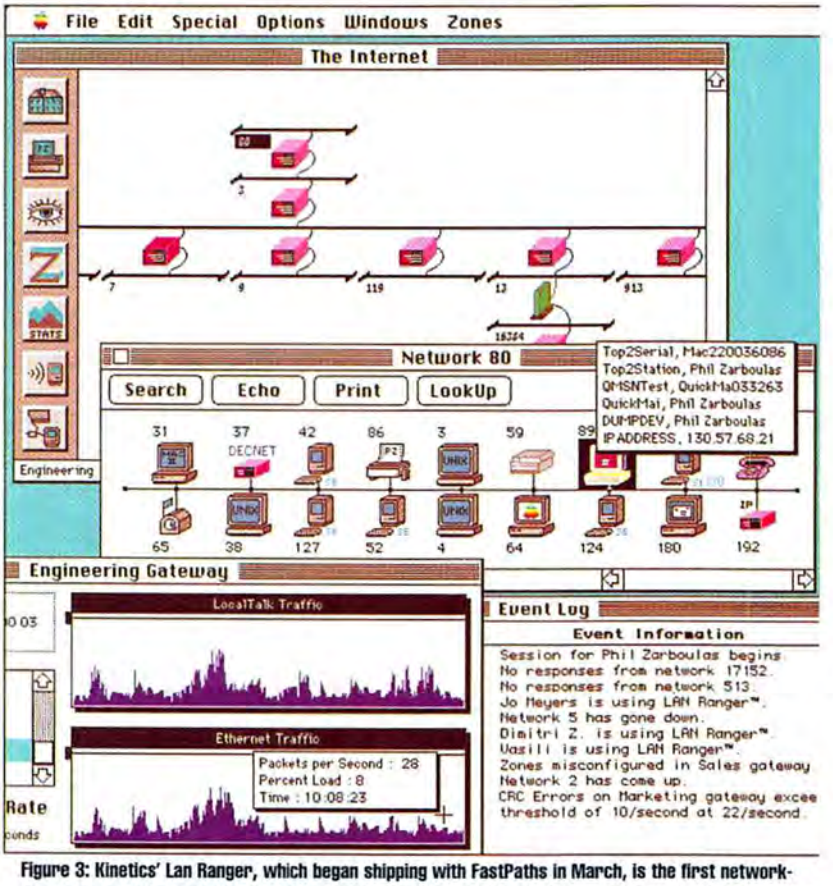


Figure 3: Kinetics' Lan Ranger, which began shipping with FastPaths in March, is the first network-management tool to take full advantage of the Mac's graphical interface. Bridges and network devices are represented by icons, and network traffic is displayed in graph form.

THE LATEST IN THE NETWAY 1000 FAMILY

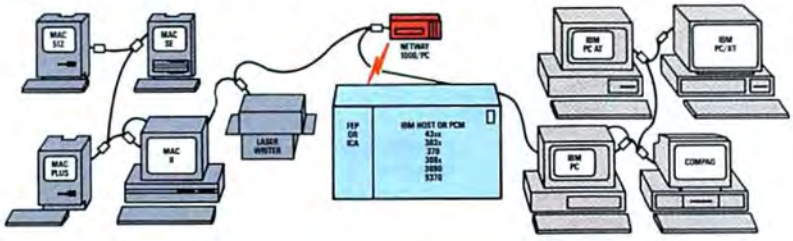
Team up your Macs and PCs for LAN-based 3270 access.

The Netway® 1000/PC. It's a vision that's become reality. The first SNA gateway offering total access to the 3270 world for every workstation in your corporate workgroup.

The best of both worlds.
Bring together the sophistication and flexibility of the LocalTalk™ LAN with the power of an IBM® host. With the Netway 1000/PC, every IBM PC (or compatible), along with all the Macintoshes in your LocalTalk workgroup, can get full 3270 workstation emulation with a wide range of features such as color and API support. All this in a multivendor LAN environment. And Netway's industry-standard file-transfer support means your Macs, PCs and mainframe can exchange text, Mac or IBM PC application files with ease.

Multisession capability.
The Netway 1000/PC is the only SNA gateway that permits users to be logged on to as many as six host sessions on the PC and up to eight host sessions on the Macintosh. On the PC you can toggle in and out of sessions via a hot-key sequence. With MultiFinder™ on the Macintosh, you can window host sessions and Macintosh applications concurrently.

And because it functions as a 3274 gateway, the Netway 1000/PC can easily handle 16 host sessions from different workstations in the LocalTalk workgroup.



High end solutions, low end costs.
With all its high end features, you'd expect the Netway 1000/PC to carry a price tag to match. But you'll be pleasantly surprised. For a workgroup of 16 Macs and PCs, the Netway 1000/PC costs less than $250 per active 3270 workstation session.

From the leader in micro-to-mainframe communications.
The Netway 1000/PC is the latest in the Netway 1000 family of products, which have been serving business and government connectivity needs for more than two years.

Contact us about our demo program and connect your Macintoshes and PCs to your IBM host today.

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The Exorcist, Part II

TROUBLE SHOTS

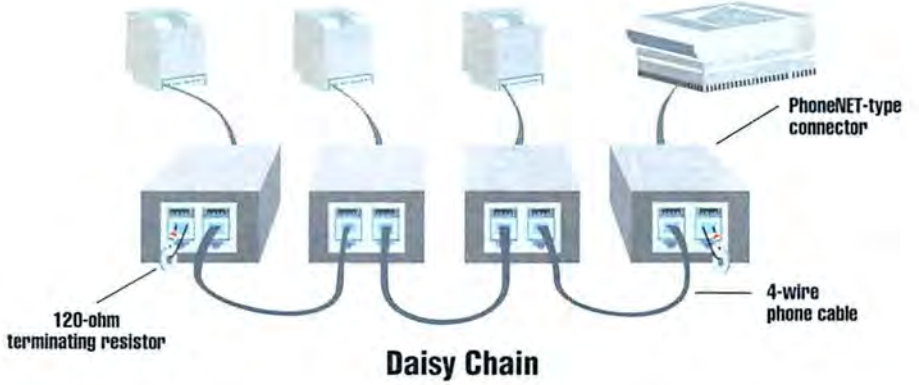
Last month we talked about *reflections*, which are like echoes in the signal — what causes them in the network and how we can tell that we have reflection problems. We said that there were two kinds of reflections: large reflections that come from an improperly terminated network and small ones that result from local changes in wire impedance.

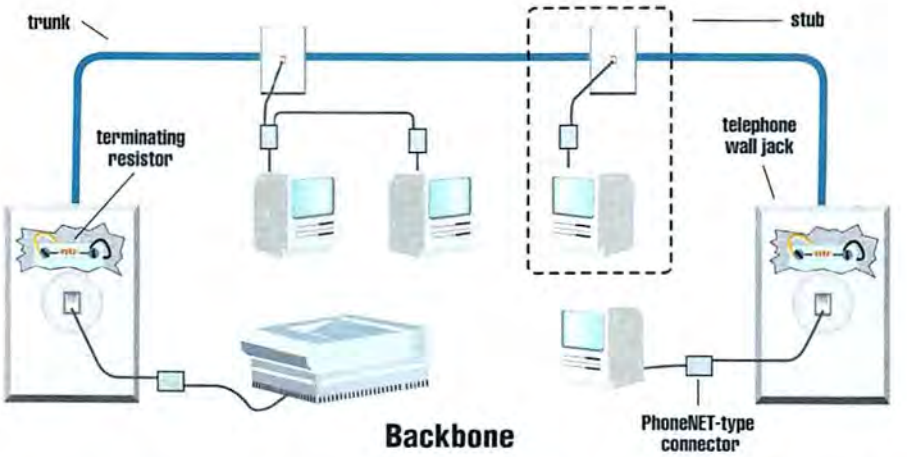
If you're using CheckNET or Inter•Poll, you can usually tell the difference between a termination problem and a small-reflection problem. If you have a large-reflection problem from improper termination, the *ghosting* (devices that disappear and reappear in the displayed list of network devices) will be chaotic, with no apparent pattern in the devices that ghost. If you have the small-reflection problem, only a few devices in a particular physical location of the network will ghost in the display. The reflection is generally located in the vicinity of the ghosting devices. You should refer to your network map to narrow down the location of the reflection.

How we find a reflection depends on two things: 1) whether we are looking for the large or small type and 2) what network topology we are using. Let's take the topologies one at a time and outline the search routine for both large and small reflections. We're also going to review the topology wiring rules at the same time, just in case anyone is a little rusty.

The simplest topology is the daisy chain. This is the topology you use for a small network with a couple of Macs and a LaserWriter all in the same room. You can create this kind of topology with Apple's LocalTalk cabling or with Farallon's PhoneNET System. The wiring limits are 1,000 feet and 32 connectors for LocalTalk cabling, or 2,000 feet and 18 connectors for PhoneNET. You should, however, never even be close to these limits in reality. If you are, you're using the wrong topology. This is for tiny networks only. If your network is larger than a few nodes in the same room, you should think about a backbone or star topology.

If you think you have a termination problem in a daisy chain, you should check the termination by looking at the connectors at the end of the chain. With LocalTalk, the connector at each end should have only one wire plugged into it, while the other DIN-3 jack should be open with nothing plugged into it. With PhoneNET, the end connectors should have the network wire plugged into one of the two RJ-11 jacks and a mounted terminating resistor in the other. In either cabling system, all the connectors in the





In a daisy chain, LocalTalk devices are connected serially, either with Apple's LocalTalk connectors and cabling (not shown) or with PhoneNet-type connectors and standard modular four-wire telephone cable. The latter require that you plug a terminating resistor into one of the jacks on each end connector. In a backbone topology, four-wire "trunk" is run throughout a building with wall jacks attached to the trunk. A terminating resistor is attached between the black and yellow terminals in the wall jack at each end of the trunk. Apple's LocalTalk cabling cannot be used with this topology.

By Kurt VanderSluis

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middle should have a wire in each jack.

The small reflection in Apple's LocalTalk cabling can come from two things: a kink in the cabling or a loose connector. A kink in the wire may result from someone's rolling a desk chair over the LocalTalk cable. You can see that the wire is physically kinked if this is the case. Much more common is that, somewhere along the daisy chain, the network wires have come slightly loose from the connector and the network wire is not plugged completely into the connector. This is somewhat tricky to find because you have to walk around to all the connectors and check them one by one. (Kensington makes a clip that prevents the wires from falling out.) If you have PhoneNET and it is properly terminated, you shouldn't have small reflections. In unusual cases, they can come from bad crimps of the RJ-11 connectors on the flat wire or bent prongs inside the PhoneNET connector.

If you have a mixed daisy chain with both PhoneNET and LocalTalk cabling, be sure that you have only one adapter cable in the chain, with all LocalTalk on one side and all PhoneNET on the other. There will always be a reflection at the adapter cable, because it joins shielded and unshielded wire together. This is undesirable, but you can minimize the ill effect by doing it only once.

If you have a backbone topology (see Figure 1) using Farallon's PhoneNET System, the wiring rules are a little more complicated. The end-to-end distance of the trunk of the backbone has to be less than 4,500 feet with 22 AWG wire (3,000 feet with 24 AWG wire and 2,000 feet with 26 AWG wire). You then have to reduce this number because of the stubs coming off the trunk. (A *stub* is a daisy chain that has one end connected to the backbone and is less than 50 feet long.) Adjust the end-to-end distance of the trunk by subtracting four times the total stub length on the backbone. Measure a stub by the wire length from the backbone out to the last device on the stub. As long as the stub is less than 50 feet, it should not have a terminator in the connector of the last device. Also, the trunk of the backbone should be made out of round twisted wire (telephone wall cable), and the stubs should be made out of flat untwisted wire (modular extension cable). The stubs are connected to the backbone at telephone wall boxes along the trunk.

On a backbone, there are two ways to terminate the ends of the trunk. The preferable way is to place a terminating resistor in the wall box at each end of the trunk. If you have terminated your backbone using this method, you can use an ohmmeter to check the connection. First remove all the connectors along the backbone and measure the resistance between the two network wires. You can do this by measuring the resistance between the two terminal screws (probably yellow and black) that are connected to the network wires at any of the telephone wall boxes. In a backbone, you should have a 120-ohm resistor at each end of the trunk, and you should measure 60 ohms across the terminal screws. If you measure 120 ohms, you probably are missing a terminator at one end. If you measure 0 ohms, there is probably a short in the wire. If you measure an infinite resistance, you probably don't have any termination at all. And if you measure 1 or 2 ohms, you probably haven't removed all the connectors from the backbone. Remember that the resistors and the meter may be a bit off from true, so allow a little tolerance in the reading. If you measure anywhere between 58.5 and 61.5 ohms, count it as a normal measurement.

If, in your network design, you have elected to terminate your backbone by placing the mounted terminating resistor in the connector, you must use physical inspection to check the termination. Look at the stubs connected to the two end wall boxes. There should be a terminating resistor in the last device on the stub of each of them. This is a dangerous way to terminate a backbone, because it relies on the user's knowledge of the termination rules. You should put the terminator in the wall box and not in the connector.

If you have followed all these rules for making a backbone, you shouldn't have any problems with small reflections. The only remaining possibilities are inferior connectors or one of the anomalies I've mentioned.

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Putting Up Emacs

A/UXILIARY INFORMATION

Let's face it: The standard UNIX text editors can be described most politely as brain damaged. The original UNIX editor, ed, was designed for use with prehistoric hard-copy, Teletype terminals. The next generation, vi, supports screen editing but still retains much of the primitive one-line-at-a-time personality of ed. The best thing about these editors is their ubiquity — if you log in to any UNIX machine, you are pretty much guaranteed that ed and vi will be there.

Fortunately, A/UX ships with GNU Emacs, perhaps the world's best editor. Written by Richard Stallman of the Free Software Foundation, GNU Emacs is a descendant of Stallman's original Emacs, developed at MIT's Artificial Intelligence Lab. Emacs is so powerful that it would take a longer article than this just to list its features. Suffice it to say that if you can think of it, Emacs can probably do it. Emacs is a full-screen editor that supports the editing of multiple files concurrently, and it can be customized in just about any way imaginable. If UNIX is driving you crazy, Emacs even provides an on-line psychiatrist to wash your weary brain.

The Tutor Is the Computer

Emacs has an on-line tutorial that quickly teaches you the basics, as well as complete on-line documentation of all commands. The Free Software Foundation publishes a printed version of the user manual, *GNU Emacs Manual*, by Richard Stallman, available wherever better UNIX books are sold.

Unfortunately, Apple distributes only the source code for Emacs, so you have to build the executable version yourself. Apple probably decided to do it this way because building Emacs uses about 3 megabytes of disk space, and A/UX ships with precious little free space.

The Source of All Goodness

The Emacs files are sitting in /usr/src/emacs. When you turn to this directory, you'll discover files named INSTALL, README, and PROBLEMS. A brief glance at their contents shows they were written "for programmers only." But there is another file, build-install, which is a shell script that (you guessed it) builds and installs Emacs.

Before running this script, however, you will want to fix a couple of bugs in the source code. These bugs were present in the 1.0 A/UX release, and we did not know at press time whether they were fixed in the 1.1 release. (Although you need to know a little bit about C and UNIX programming in order to understand the bugs, no such knowledge is required to fix them!)

The first bug is that an important line of code is never compiled because it is misplaced inside a `#ifdef VMS ... #endif` statement. `#ifdef VMS` indicates code that is intended for DEC's VMS operating system and is not compiled under A/UX. The misplaced line is a call to `set42sig()`, which tells A/UX to use Berkeley UNIX signals instead of the less reliable AT&T System V signals. The second bug is in A/UX itself. A/UX 1.0 reportedly generates occasional spurious SIGIO signals. Such a signal will interrupt Emacs — or vi, for that matter — if it occurs while Emacs is running. The fix is simple; just add a few lines of code that tell Emacs to ignore SIGIO.

Fixing the Code

Here is the solution to both problems. First, log in as root. Edit the file /usr/src/emacs/src/emacs.c. Lines 173-175 read:

```
#ifdef OREO
    set42sig();
#endif
```

These lines sit inside the `#ifdef VMS` statement that began on line 166. Delete these three lines. You will then add a few new lines of code, just before the `#ifdef VMS` statement. Here is the new code, with the old line `#ifdef VMS` shown in place in italics for context:

```
/* use BSD signals, trap SIGIO */
#ifdef OREO
    int eat_sigio();
    set42sig();
   signal(SIGIO, eat_sigio);
#endif
/* end of added code */
#ifdef VMS
```

Finally, go to the very end of the file and add these lines:

```
/* used to ignore SIGIO when generated by
  A/UX erroneously */
   eat_sigio() {}
```

That's all there is to it. Next make sure you have at least a few free megabytes of disk space. The UNIX command df will report how many free blocks you have. Building Emacs uses about 6,100 blocks. Finally, change to the /usr/src/emacs directory and type `build-install`. It took a little over an hour to build Emacs on a 5-megabyte Mac II. When everything is finished, you will find Emacs installed in the directory called /usr/local/bin, with supporting files in /usr/local/emac. Enjoy!

If you like Emacs, you can make a tax-deductible donation to the Free Software Foundation, 675 Massachusetts Ave., Cambridge, MA 02139.

By James Finn and Hugh Daniel

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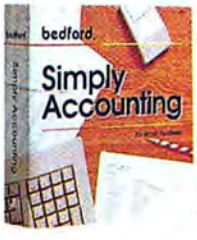
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THE HELP FOLDER

BY CHRIS ESPINOSA

Got a Mac problem? Something you'd like explained? Something you can't find the answer for anywhere else? Apple's Chris Espinosa will answer your questions every month in this space. When the questions are too tough or too esoteric for him, he'll get the answers from other members of the Mac team. So ask what you need to know and get your answers straight from the source!

Send your questions to Chris, c/o MacUser, *950 Tower Lane, 18th floor, Foster City, CA 94404. Chris will read all your questions, but, unfortunately, he may not be able to answer individual queries.*

CLUMSY ME

Both Robert M. Sage of Montreal and Michael H. Kravitz of Mt. Laurel, N.J., write to chide me about my response to Trevor Robinson in the December number. He'd wondered why he was having trouble using FileMaker 4 on his upgraded Macintosh 512K, and my reply omitted one simple, but crucial, fact: It won't work. FileMaker 4 specifically checks for the presence of a SCSI port, as well as for the 128K ROMs and extra memory, and won't work unless it finds them. Add-on SCSI ports such as MacAdapt from SiCLONE Corporation (1169 Borregas Ave., Sunnyvale, CA 94089; (800) 862-2636, or in California, (408) 734-2436); the SCSI Upgrade from MacProducts (8303 Mopac Expressway, Suite 218, Austin TX 78759; (512) 343-9441); the JasPort from Jasmine Technologies Inc. (1740 Army St., San Francisco, CA 94124; (415) 282-1111); or the Model 524 series from Dove Computer (1200 North 23rd St., Wilmington, NC 28405; (800) 622-7627) should solve the problem. My apologies to Mr. Robinson and all readers who were confused; my thanks to Messrs. Kravitz and Sage (though, Michael, if you're going to get huffy, please at least learn to spell SCSI correctly . . .).

FONTS, FINALLY

Many readers have written to me asking for a source for more ImageWriter LQ, LaserWriter SC, and AppleFax modem fonts. I received word this week of some more fonts — excuse me, fon*t* — for these QuickDraw printers.

Casady & Greene, Inc., formed by the August merger of CasadyWare and Greene, Inc., is shipping an ITC Garamond font in sizes of 10, 12, 14, 18, 24, 30, and 36 points for the LQ, SC, and AppleFax modem. Garamond is the font that Apple uses in most of its ads, brochures, and manuals, so it should be clear and familiar. Try Casady & Greene, P.O. Box 223779, Carmel, CA 93922; (408) 624-8716, MCI Mail CASADY.

FILLING IN FORMS

Q. I have a Macintosh Plus with 2 megabytes of RAM, a 30-megabyte hard-disk drive, and an ImageWriter II with a sheet feeder. I also have access to equipment to digitize forms and put them into the Macintosh.

I would like to scan a form, say a corporate tax form, into a file, input data onto the form, and print it.

NEIL DOLLARHIDE
WOLFEBORO, N.H.

A. Two packages are designed just for that purpose: 1stScan, from 1stDesk Systems, Inc. (7 Industrial Park Road, Medway, MA 02053; (508) 533-2203), and Executive Office, from Datapak Software, Inc. (14011 Ventura Blvd., Suite 507, Sherman Oaks, CA 91423-3587; (818) 905-6419).

With 1stScan, you scan in your form, and 1stScan looks for hollow squares or underlines in it and automatically creates data-entry fields there. Then you define data types (date, time, sequence, computed, integer, or currency). You can then use the form either with 1stScan or 1stBase, the simple database program from 1stDesk. Forms can be printed as blank or with data from any 1stDesk data file merged into the fields. It runs under MultiFinder and costs $295.

Executive Office is more than just a forms scanner; it's an entire office-management system with desktop design tools, file management, word processing, mail-merge and a spreadsheet. You can import your scanned form into the forms-design tool and define the fields yourself; a field's value can be filled in or computed using values from any other form in the system. Then you can use all of the other capabilities — spreadsheet, mail merge, search, and sort — on the information. Executive Office costs $195.

THE WRONG WAY TO SAVE RAM

Q. I have a Macintosh Plus (using Finder 6.0 and System 4.2) with only 1 megabyte of RAM. I like to use MultiFinder, but the System is so big! I had this great idea: Remove every font that the system would allow and trash all of the desk accessories. I thought this would free up big-time space. It didn't. Why? Selecting About the Finder from the Apple menu,



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THE HELP FOLDER

I see, when using more than one application, that the System memory grows too. Why?
THOMAS P. TOWKACH
JACKSONVILLE, FLA.

A. The size of the System file on disk has very little to do with the amount of RAM that the system uses. Fonts and desk accessories are perhaps the biggest reason for the discrepancy; that's because they're stored as resources in the System file, they can be brought in from disk only as needed. And whenever possible, they're brought into the application's memory space or a separate memory space dedicated to desk accessories. Only when there's no room anywhere else are they loaded into the System's partition.

The System partition includes a lot of things: memory used by the SCSI driver and the RAM cache, a certain amount of memory that the ROM needs, and, on the Plus and SE, the 22K taken up by the display screen. But most of it is what's called the *system heap*, the working memory for the System software. On older Macs this was set at a constant 48K, and it grew as we added capabilities to the System (such as AppleTalk). With System 5.0 and later, the size of the system heap (and therefore the System partition) is set when you start up the machine, and is determined by the needs of the startup documents in your System folder.

If you want to reduce the amount of memory reserved for the System, first make sure the RAM Cache is turned off in the Control Panel. Open your System folder and view it By Kind. Look for files of the type "Startup document" and "Control Panel document" — things like CheapBeep, Façade, and Easy Access. Move the ones you don't need out of the System folder and restart, and you'll reduce the amount of memory reserved for the System.

MultiFinder constantly adjusts the system heap size to make sure there's always enough to handle a font or desk accessory request. That's why its size changes slightly as you open more applications under MultiFinder.

SAVE THE TREES — KILL THE TEST PAGES

Q. **I am about to tear out what strands of hair I have left on my head, thanks to the LaserWriter IINT. It is intent on spitting out a test page every single time I turn it on. This is obviously an ingenious little bit of programming on behalf of Apple; it's probably to remind us exorbitant spenders what an excellent printer it is.**

I've reached my wit's end with these test pages. I must have already spent a ream of paper on these useless things. I agree it is an excellent printer, but if the first page turns out to be bad (which rarely happens), I can always print out another one. Who needs this aggravation? There is absolutely no need for that test page except for a salesman to use while impressing a LaserWriter gawker with a hole burning in his pocket.

I would be ever so grateful if you were to indulge my programming dyslexia and show me how to tell my LaserWriter IINT where it can put those test pages, and to stop burping at me every time I turn the thing on. You will be doing me and my scalp a great favor.
ALEX RODRIGUEZ
HIALEAH, FLA.

A. The test print does more than chew up paper and impress yokels. If for some reason you can't print a document, the successful printing of a test page indicates that the problem is in the network or the Mac, not in the printer itself — which might save you a lot of money on a service call. But since you want to get rid of it, here are three suggestions:

Don't turn the printer off. It consumes little power and is fairly quiet when idling, and leaving it on all the time doesn't diminish the printer's useful life. In order to have plowed through a ream of test pages, you must be turning it off and on a couple of times a day.

CE Software sells a grab-bag of utilities called Widgets, which is included in CE's MockPackage and DiskTop products. There's a utility program in Widgets that turns off the printing of the test page. I think that's what you want. CE Software, P.O. Box 65580, West Des Moines, IA 50265; (515) 224-1995.

If you have a terminal emulator program for your Mac, or a serial terminal, or a PostScript downloader program, you can send this PostScript program to the printer:

```
serverdict begin 0
  exitserver
statusdict begin
dostartpage false
end
```

To enable the test page again, send:

```
serverdict begin 0
  exitserver
statusdict begin
dostartpage true
end
```

Your LaserWriter manual includes instructions on how to send PostScript commands to the LaserWriter from a directly connected Macintosh.

PROGRAMMING HELP

Q. **I would like some help on problems I have encountered while trying to write a Macintosh application.**

1) How do you play *snd* resources?

2) Why doesn't my program acknowledge a click on the MultiFinder icon in the menu bar? (The demo program I copied the event handler from works fine.)

3) How can I find out if a program was launched with a document, and if so, which document?

4) Why does the Alarm Clock DA jumble my variables? When I open the Alarm Clock when my application is running, it stops working, although I can use the menus and quit (on an SE, it got a bomb, ID = 02). Other desk accessories work fine.

I'm using Lightspeed Pascal version 1.0 on a Mac Plus using some System older than 4.1 (I can't find any version number on it).
EGGERT THORLACIUS
REYKJAVIK, ICELAND

THE HELP FOLDER

A. First, I'd recommend picking up some new System software from any Apple dealer, buying the latest volumes of *Inside Macintosh,* and upgrading your copy of Lightspeed Pascal (now called THINK's Lightspeed Pascal) to version 2.0. In answer to question 1, *snd* resources are for use only with the Sound Manager that appears in System version 5.0 and later, so it's unlikely that you'll get any sound even if you write code for it. Instructions for using the Sound Manager (which essentially replaces the Sound Driver used in previous versions of the System) can be found in *Inside Macintosh, Volume V,* which covers the Mac SE and Mac II.

For question number 3, check out the chapter called "The Segment Loader" in *Inside Macintosh, Volume II.* When the Finder launches an application with documents selected, it leaves a list of the names of those documents in a memory block in the System heap. A low-memory global called AppParmHandle contains a handle that points to that list, so you can recover the names. It also tells you whether the user chose Open or Print so you can do the right thing.

Questions 2 and 4 get into the realm of source code debugging, which is pretty hard to do by mail. What's probably causing number 4 is a dangling pointer: You're dereferencing a handle to the block that holds your variable (with a statement like RectPtr := RectHand^) then later on using the pointer to refer to the variable. But in the meantime, some other process (like, say, a desk accessory) may have asked for a bit of memory from the Memory Manager.

The Memory Manager, eager to grant the request, might shuffle some of your memory blocks around in order to make room for the newcomer. This means that the pointer you had (RectPtr in the example above) might now be pointing to where your block *used* to be, but which now contains something completely different; when you use it, your application breaks.

And problem number 2? I don't know; it's probably a bug, too.

SILENT MAC

Q. I own a Mac Plus and recently acquired System version 6.0.2. Because I can afford only floppy drives and never need MultiFinder, I have elected to continue using System 4.1 to save disk space.

In the 6.0.2 upgrade, however, I noticed that a new cdev is included to allow the user to change the traditional beep sound to the sound of the user's choice (Monkey, Boing, etc.). I copied the new Sound cdev to my System 4.1 disk, and using ResEdit, I also copied the necessary *snd* resources, but I am unable to get more than the volume control to appear in the Control Panel window. Do I also need to copy another resource, or is what I am trying to accomplish not possible with System 4.1?

THOMAS A. WYNN
CLATSKANIE, ORE.

A. First of all, it's rather brave to try to move a feature, piece by piece, into an older version of the software. Each new version of the System software includes an installer script that updates previous versions in all ways possible; it's best to stick with those installers, because throwing new resources into the System folder is tricky business.

As mentioned above, what's missing from your doctored System file is the Sound Manager. Older versions of the Macintosh System used a sound driver to make simple noises on the sound circuitry common to all Macs. But the Mac II has more sophisticated sound, Apple has a MIDI interface, and many more applications want to create sounds, so the simple sound driver no longer covers all the bases.

The Sound Manager handles all kinds of sounds on all Macintosh systems. The Sound Manager is in the ROM of the newer machines and in the System file for the Mac Plus. The Sound cdev can tell whether it's using the old Sound Driver or new Sound Manager; it can control the volume on both, but it can do custom system beep sounds only if the Sound Manager is present.

To get the Sound Manager into your System file, try using the Minimum Plus System installation script that came on your System version 6.0.2 disks. That should give you the Sound Manager and other 6.0.2 features and still leave you some disk space.

VT 100 EMULATION

Q. I am a big user of Microsoft Works and I think a lot of the package. I am having some problems I could use some help with.

Works contains a VT 100 terminal emulator, but I cannot get it to work with EDT on our VAX computer. If a VT 100 emulation is any good, it should work with EDT. In particular, it should update the screen properly when you advance the cursor a few lines. Instead, Works overwrites the last two lines of the screen repeatedly and leaves the rest of the screen untouched. I have absolutely no trouble with EDT when I use the terminals connected to the VAX. Is there some way to make this work properly?

I would also like to be able to download a file from the VAX into the word processor and have word-wrap work properly. Instead the file has hard carriage returns at the end of each line, and word-wrap is useless. Is there a way out of this? I want to be able to download files and work on them at home with Works and then upload them and work on them in the office with EDT. They are just text files, and I should be able to do that!

JIM HASKETT
ELLENSBURG, WASH.

A. Doing complete terminal emulation is tough, and some packages don't get it quite right. First, make sure that your VAX is set to communicate with your Mac as a true VT 100 and not some other model; try the sim-

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MacUser gave WetPaint 5 mice (Sept. 1987) saying "...the WetPaint art is almost a must for clip-art users; the ArtRoundup desk accessory is a neccessity." Volumes marked with * were previously released as part of the award winning "MacMemories" series.

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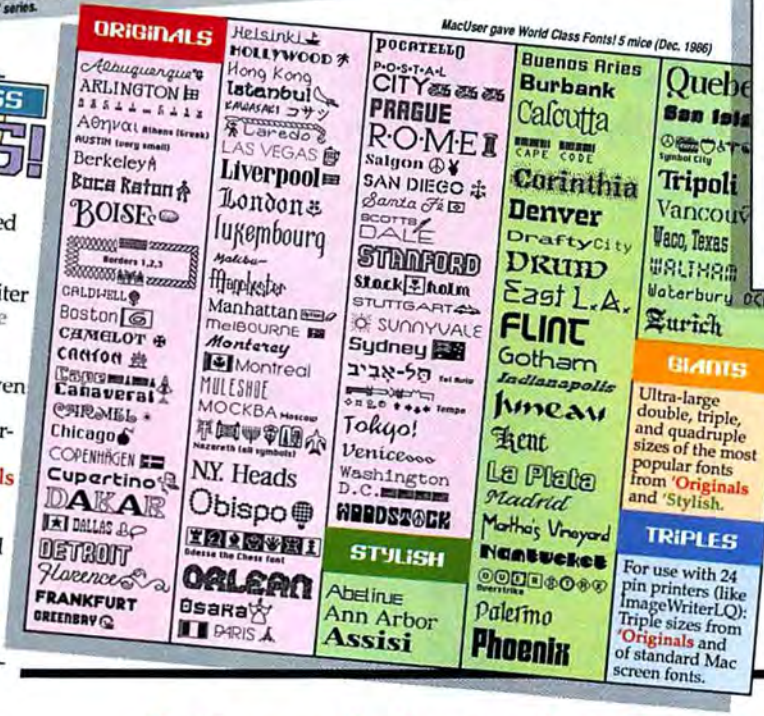
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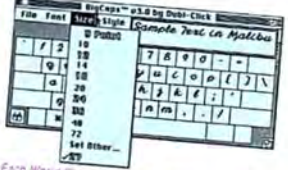
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MacUser gave World Class Fonts! 5 mice (Dec. 1986)



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plest possible VAX terminal settings (like plain old TTY) and see if that works (though it'll be slower, if EDT can work with TTY devices at all).

Second, DEC supplies a test program to check VT 100 emulations for completeness. You may have this on your system; check with your DEC representative if you don't.

If Works fails the emulation test, you might consider one of these other terminal emulators: Smartcom II 3.0 from Hayes Microcomputer Products, Inc.; Red Ryder 10.3 from FreeSoft; MicroPhone II from Software Ventures Corp.; and VersaTerm Pro from Peripherals Computers & Supplies, Inc. All of these have an advantage over Works: they can download files in the background under MultiFinder. Red Ryder in particular is inexpensive ($80), and its VT 100 emulation is excellent.

Your problem with text is not uncommon. Most mainframe-based programs insert hard carriage returns at the end of every line of word-wrapped text; after you download a file, you have to remove the unwanted Return characters before you can edit the file normally on a Macintosh word processor. In some cases, you'll also have to reinsert them before you upload!

A handy desk accessory is McSink (or its full-featured cousin Vantage), from Preferred Software, Inc. (5100 Poplar Ave., Suite 706 Memphis, TN 38137; (800) 446-6393). McSink is a text editing and processing desk accessory that does everything you want to do with plain text: Convert it from word-wrapped to broken lines and vice versa; count words, lines, and paragraphs; indent, sort, columnize, number, and convert case of lines of text. You can even program McSink with its own macro language.

McSink is very useful if you're dealing with text downloaded from a text-oriented computer.

TECH NOTES FROM THE NEW APDA

Q. I have obtained a few of the Mac Tech Notes from a friend, but I don't have a complete set. Do you know who distributes them?

CRAIG AGRICOLA
MORROW, OHIO

A. Macintosh Technical Notes and all other Apple developer tools are now available from APDA. Run since 1986 by the A.P.P.L.E. Co-op in Renton, Wash., APDA has moved down to Apple's headquarters in Cupertino. To join APDA, call (800) 282-APDA.

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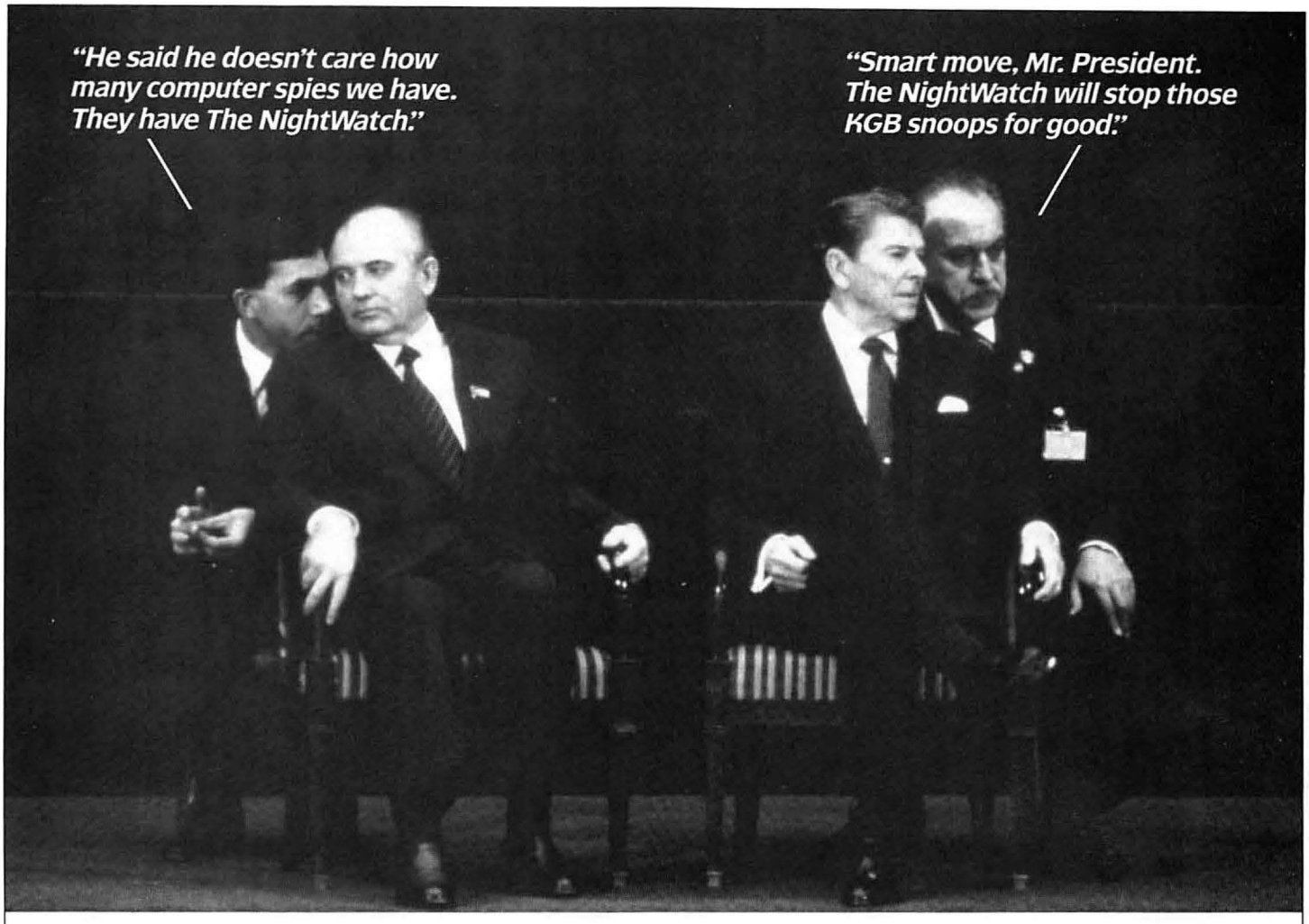
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UPDATES

Times are changing, and so are many versions of your favorite programs.

Therefore, the following chart is an attempt to keep the interest and knowledge of Mac users up-to-date with the upgrades and new versions (as of press time) of many popular programs. To see if you have the most current versions, check the About box at the top of the Apple menu when you run a program.

Those with the 512K, 512KE, or XL should be running System 3.2 and Finder 5.3. Everyone else should be running System 6.0.2.

Bright Star Technology has updated HyperAnimator to version 1.5. HyperAnimator was used to make the Professor Albert character in Disney's remake of *The Absent-Minded Professor*.

All programs listed here are Hierarchical File System (HFS) compatible. From this chart, you can extract the following information: CP or NCP, copy-protected or not; //, programs we have found to be Mac II compatible (not yet a comprehensive list); and S for shareware (try before you buy).

Changes and new listings are in **bold.** Programs that appear to be compatible with the Mac II may not actually perform 100 percent of the functions they do on other Macs, and they may not necessarily take full advantage of the Mac II.

A.A.I.S. Prolog	M1.15	NCP
Aatrix TimeCard	2.0	NCP,//
Accountant, Inc.	2.1	NCP,//
Acta	2.0	NCP,//
AffiniFile	1.1	NCP,//
AMS General Ledger	2.08	NCP
AppleShare Workstation	2.0.1	NCP,//
ArtRoom	3.0	NCP,//
Assistant Controller	5.4	NCP,//
Aztec C	3.4b	NCP,//
Backgrounder	1.2	NCP
Back to Basics	1.03	NCP
Bulk Mailer	3.23	NCP,//
Business Filevision	1.1	NCP
CalendarMaker	3.0	NCP,//
Canvas	2.0	NCP,//
Capture	1.1	NCP,//
CAT	2	NCP, //
Chart	1.02	NCP
Chooser	3.3	NCP
ClickArt Effects	1.01	NCP,//
Clipper	1.01	NCP
CloseView	1.0	NCP
Cognate	1.5	NCP,//
Colleague	1.1	NCP,//
ColorChart	1.3	NCP
Colorizer	1.1	NCP,//
ColorMate	2.1	NCP
ColorPrint	2.03	NCP
Comic Strip Factory	1.6	NCP,//
Comic Works	1.0	NCP,//
Comment	2.0	NCP,//
ConcertWare+	4.0	NCP,//
ConcertWare+MIDI	4.0	NCP,//
Control Panel	3.3	NCP
Copy II HD	7.1	NCP
Copy II Mac	7.1	NCP
Course Builder	3.1	NCP,//
Cricket Draw	1.1.1	NCP,//
Cricket Graph	1.2	NCP
Cricket Presents	2.0	NCP,//
Curator	1.05	NCP,//
DA Handler	6.0	NCP
Deluxe Music	2.5	NCP,//
Design/IDEF	1.1	NCP,//
DesignScope	1.14	NCP,//
DeskLink	2.0	NCP,//
Disk Express	1.10	NCP
Disk First Aid	1.4	NCP
DiskFit	1.5	NCP,//
DiskInfo	1.45	NCP,S
Disk Ranger	3.1	NCP
Disk Tools Plus	1.01	NCP,//
DiskTop	3.0.4	NCP,//
Dollars & Sense	4.0	NCP,//
Double Helix II	r40	NCP,//
"Draw it Again, Sam"	2.04	NCP,//
Dungeon Revealed	1.2.3	NCP,//
Easy Access	1.0	NCP
Easy3D	1.01	NCP
Edit	2.1	NCP
Excel	1.5	NCP,//
ExperCommon Lisp	2.2	NCP
ExperLisp	1.5	NCP,//
ExperLogo	1.1	NCP
Expressionist	2.0.3	NCP,//
EZ Draft	2.0	NCP,//
Falcon	2	NCP,//
FastBack	1.02	NCP,//
Fast Forms	1.2	NCP,//
File	2.0	NCP,//
Ferrari Grand Prix	1.5	CP,//
Filemaker II	1	NCP,//
Finder (HFS)	6.1	NCP
Finder (MFS-128K)	4.1	NCP
Findswell	2.0	NCP,//
1st Aid Kit-HFS	2.5	NCP,//
FONTastic Plus	2	NCP,//
FontFolio	1.0	CP,//
Font/DA Mover	3.8	NCP
Fontographer	2.3	CP
FontShare	1.1	NCP,//
Forecast	2.0	NCP,//
4th Dimension	1.0.6	NCP,//
FoxBASE+/Mac	1.10	NCP,//
Frame Mac	1.1	NCP,//
FreeHand	2.0	NCP,//
FreeTerm	2.0	NCP,//
FullPaint	1.0	NCP
FullWrite Professional	1.0	NCP,//
General	3.3	NCP
GeoQuery	1.01	NCP,//
Glue	1.04	NCP
GraphicWorks	1.13	NCP
Handwriting Analyst	1.2	NCP,//
Hard Disk 20	1.1	NCP
Hard Disk Utility	2.0	NCP
HD Backup	1.1	NCP
HD SC Setup Apple	2.0	NCP
HFS Backup	3.0	NCP,//
HFS Locator Plus	2.0	NCP
HyperAnimator	1.5	NCP,//
HyperCard	1.2.1	NCP,//
HyperDA	1.1	NCP,//
HyperEngine	1.1	//
Illustrator	1.0	CP/NCP,//
ImageWriter	2.7	NCP
ImageWriter, AppleTalk	2.7	NCP
ImageWriter LQ	2	NCP,//
ImageWriter LQ, AppleTalk	2	NCP,//
InBox	3.0	NCP,//
Insight Expert Accounting	2.01	NCP,//
Installer	2.04	CP,//
inTalk	3.0	NCP,//
Interleaf Publisher	3.5	CP,//
Jam Session	1.1	CP,//
Jazz	1A	CP
JustText	1.1	NCP
Keyboard	3.3	NCP
Key Layout	2.3	NCP,//
Language Systems FORTRAN	1.2	NCP,//
LapLink Mac	2.0	NCP,//
Laser Author	1.3	NCP,//
LaserPaint	1.9	NCP,//
Laser Prep	5.2	NCP
LaserShare	1.0	NCP
LaserSpeed	1.6	NCP,//
LaserStatus	2.0	NCP
LaserWriter	5.2	NCP
LaserWriter IISC	1.1	NCP
Layout	1.3	NCP,S
Legal Billing	1.86	NCP,//
Legal Billing II	2.56	NCP,//
LightSpeedC	3.0	NCP,//
LightSpeed Pascal	2.0	NCP,//
Listen 2.0	2.1	CP,//
Lookup	1.0c	NCP,//
Mac3D	2.1	NCP,//
MacASM	1.2	NCP
MacBillboard	4.01	NCP,S
Mac C	5.0	NCP,//
MacCalc	1.2	NCP
MacChuck	1.5	NCP,//
Mac Daisy Link	1.04	NCP,//
MacDesigner	2.0	NCP,//
Mac Disk Catalog II	2.1c	NCP
MacDraw II	1.1	NCP,//
MacDraft	1.2b	NCP,//
MacFlow	2.04	NCP,//
MacFortran (all)	2.4	NCP,//
MacFortran / A/UX	1.0	NCP,//
MacGolf Classic	3.0	CP,//
MacInTalk	1.1	NCP
MacLabeler	2.2	CP
MacLinkPlus	3.0	NCP,//
MacMoney	3.02	NCP,//
MacMovies	1.02	NCP
MacNosy V2	2.8	NCP
MacPaint	2.0	NCP,//
MacPalette	1.0	CP
MacPascal	2.1	CP
MacProject II	1.0	NCP,//
MacProof	3.0	NCP
MacSchedule	1.1	CP,//
MacScheme+ Toolsmith	1.51	NCP,//
MacServe	2.3	CP,//
MacSpec	1.3	CP
MacSpin	1.1	CP
MacSpool	3.0	NCP,//
MacTell	3.5	NCP, //
MacTerminal	2.3	NCP,//
MacTools (MFS/HFS)	7.1	NCP
MacWrite	5.0	NCP,//
Mac Zap	5.0	NCP,//
MailManager	1.0	CP
Managing Your Money	2.0	NCP,//
Map	1.1	NCP
Maple	4.2	NCP,//
MapMaker	3.0	NCP,//
Master Tracks Pro	3.3	CP,//
MathWriter	2.0	NCP,//
Mavis Beacon Teaches Typing!	1.2	NCP,//
MDA	2.0	NCP,//
MDS	2.0	NCP
Measure Test	12.7	CP,S,//
Megamax C	3.0	NCP
MGMStation CAD	2.5	NCP,//
MicroPhone	1.5	NCP,//
MicroPhone II	2.0	NCP,//
Micro Planner Plus	6.0	NCP,//
MindWrite	2.0	NCP,//
MockPackage+	4.4	NCP,//
Modern Artist	2.0	NCP,//
MORE II	2.0	NCP,//
Mouse	3.3	NCP
MPW	3.0B1	NCP,//
MS BASIC	3.0	NCP
MS BASIC Compiler	1.0	NCP
MS Fortran	2.2	NCP
MS Works	1.1	NCP,//
MultiFinder	6.0	NCP,//
Multiplan	1.11	NCP,//
Music Publisher	2.0	NCP,//
MusicWorks	1.1	CP
myDiskLabeler	2.11	NCP,//
'Ncryptor	2.0	NCP,//
Neon	2.0	NCP
Omnis III Plus	3.3	NCP,//
On Cue	1.3	NCP,//
Orbiter	1.2	NCP,//
OverVUE	2.1e	NCP,//
PageMaker	3.01	NCP,//
Parameter Manager Plus	3.0	NCP,//
Performer	2.31	CP
PictureBase	1.2	NCP
P51 Mustang Flight Simulator	2.02	CP,//
Plains and Simple	4.1	NCP,//
PLP	2.0	NCP,//
PowerPoint	2.01	NCP,//
PowerStation	2.5	NCP,//
Print Monitor	1.2	NCP,//
Professional Composer	2.1	CP
Profit Stalker II	1.3	NCP
Programmer's Online Companion	2.0	NCP,//
Project Billing	1.56	NCP,//
Project Billing	3.0	NCP,//
Prototyper	2.0	NCP, //
Pyro!	3	NCP,//
QuarkStyle	1.0	NCP,//
QuarkXPress	2.0A	NCP,//
QUED/M	2.07	NCP,//
QuicKeys	1.1	NCP,//
QuickMail	2.0	NCP,//
QuickWord	2.0	NCP,//
Rags to Riches	3.0	CP,//
Ragtime	2.01	NCP,//
Read-It!	2.0	NCP,//
Ready,Set,Go!	4.5	NCP,//
Record Holder	2.1	NCP
REdit	1.2	NCP
Red Ryder	10.3	NCP
Reflex Plus	1.01	NCP,//
Reports	1.2	NCP,//
ResEdit	1.1b7	NCP,//
Sales Associate	1.10	NCP,//
Scrapbook	2.4	NCP,//
SCSI Tool	1.1	NCP,//
Sensible Grammar	1.1d	NCP,//
SideKick	2.0	NCP
Silicon Press	1.1	NCP
Slide Show Magician	1.3	CP
Smartcom II	3.0a	NCP,//
SmartScrap & Clipper	2.01	NCP,//
SmoothTalker	3.0	NCP
Sound	3.3	NCP,//
SoundCap	4.4	CP
Space Edit	2.0	CP,//
SpellNow	1.0	NCP
Spellswell	2.0f	NCP,//
Startup Device	3.3	NCP,//
StatView 512+	1.1	NCP
StatWorks	1.2	NCP,//
Stella	1.3	CP,//
Stepping Out II	2.01	NCP,//
Straight Talk	2.08	NCP,//
Studio Session	1.4	CP
Suitcase	1.2.1	NCP,//
Suitcase II	1.2	NCP,//
SUM (Symantec Utilities for the Mac)	1.1	NCP,//
SuperGlue	1.05	NCP,//
SuperPaint	1.00	NCP,//
Switcher	5.1	NCP
Systat	3.2	NCP
System (HFS)	6.0.2	NCP,//
System (MFS-128K)	2.0	NCP
Telescape	1.0	NCP,//
Telescape Pro VT 100	1.1	NCP
Tempo II	1.1	NCP,//
Tetris	1.1	NCP,//
Textures	1.01	NCP,//
Think 'n Time	2.0	NCP,//
Thunder!	1.0.1	NCP
Thunderscan	4.0	NCP
Timeslips III	1.1	NCP,//
TML Pascal II	3.0	NCP,//
TMON	2.8	NCP
Top Desk	3.0	CP
TOPS	2.0	NCP,//
Trapeze	2.1	NCP,//
Turbo Download	2.1	NCP,//
Turbo Maccountant	2.0	NCP,//
Turbo Pascal	1.1	NCP,//
Type Now	1.0	NCP,//
VersaCAD	2	NCP,//
VersaTerm	3.0	NCP
VersaTerm Pro	2.0	NCP
VideoWorks II	2.0	NCP,//
VIP	2.5	NCP,//
Virex	1.1	NCP, //
Widgets	3.0	NCP
Word	4.0	NCP,//
WordPerfect	1.0.1	NCP,//
Works	2.0	NCP,//
WorksPlus Spell	2.0	NCP, //
Write	1.0	NCP,//
WriteNow	2.0	NCP,//
ZBasic	4.0	NCP

MINIFINDERS

Have you ever wished for a personal assistant to help you choose software? These MiniFinders may not breathe and move, but they do tell you which products are hot and, better, what these products do. Each of these items has been carefully reviewed and selected by the *MacUser* editorial staff. Each has been rated in increments of half mice, from 1 to 5. Ratings are relative within categories, and they can change as categories expand and new products advance the state of the art. You won't see many low ratings or bombs, since we're telling you about the cream of the crop, but we will warn you about the really bad products so that you don't spend your money on them. Red names indicate this month's additions. The letters at the end of the entries indicate whether a product is copy-protected (CP) or not (NCP). If a product has been reviewed or Quick Clicked in *MacUser*, the date of the review is shown. Eddy (Editor's Choice) Award winners are noted with a ★ and the year in which they won recognition for an excellent product. Next time you have to find products you can count on, count on *MacUser*.

MiniFinder Index

Business Accounting	**245**
Communications	**252**
Databases	**246**
Desktop Publishing	**250**
Education	**262**
Entertainment	**264**
Graphics & Design	**249**
Hardware & Accessories	**268**
HyperCard	**254**
Languages	**260**
Music	**265**
Number Crunching	**246**
Organizational Tools	**256**
Personal Finance	**245**
Utilities	**256**
Word Processors	**252**

Business Accounting

Accountant, Inc. ♦♦♦
integrates accounts payable, accounts receivable, general ledger, and inventory modules. Prints checks, purchase orders, invoices, customized reports. Bare-bones accounting system limited in size and scope, but ease of use and integration make it suitable for small businesses. Requires 512K or more. Version 2.0. $299. SoftSync, 162 Madison Ave., New York, NY 10016. NCP (Oct '87)

Back to Basics Accounting ♦♦♦♦
is a powerful double-entry accounting software package for the small business user with general ledger, accounts receivable, and accounts payable modules. Exhaustive manual with numerous examples. Report capabilities are excellent. $199. Peachtree, 4355 Shackleford Road, Norcross, GA 30093. NCP (May '87)

BPI General Accounting ♦♦♦♦
is an easy-to-use system. Six journals, Accounts Receivable, Accounts Payable, Payroll, and General Ledger on one disk. Offset amounts automatically post to ledgers. Up to 8,000 accounts. Detailed records, wide range of reports. Requires 512K or more. $89. Computer Associates, 1240 McKay Drive, San Jose, CA 95131. NCP (Aug '86)

Insight ♦♦♦♦½
is a high-powered accounting program for the small-to-medium–sized business. Modules include Accounts Receivable, Payables, and General Ledger; others are in the works. Requires 512K and hard disk. $595. Layered, 529 Main St., Boston, MA 02129. NCP (Dec '86) ★'86 Eddy

Rags to Riches ♦♦♦♦½
integrated accounting modules (General Ledger and Accounts Receivable) uses Mac interface to the hilt. Information entered in one window automatically transfers. Detailed, flexible report options. Very easy to use, but it can be confusing with several windows on-screen. Requires 512K or more and printer. $199.95 per module. Chang Labs, 5300 Stevens Creek Blvd., San Jose, CA 95129. NCP (Dec '85)

Rags to Riches Professional Billing ♦♦♦♦
tracks and bills professional services. Batches activities for individual timekeepers. Use as stand-alone, or integrate with R to R modules. Requires 512K or more, printer. $399.95. Chang Labs, 5300 Stevens Creek Blvd., San Jose, CA 95129. NCP (Feb '87)

Simply Accounting ♦♦♦♦
has six ledgers and eight journals to handle the needs of most small-to-medium–sized businesses. Better Mac interface than most. Payroll tax labels can't be modified, which forces you to subscribe to Bedford's yearly update service. Version 1.03. Requires 1 megabyte. $349. Bedford Software, 15311 N.E. 90th St., Redmond, WA 98052. NCP (Sept '88)

Strictly Business ♦♦♦♦
General Ledger features clear, well-outlined setup procedures and operations. Very flexible, up to 99 profit centers with up to 100 departments each, and customized reports. Program print spools. Requires 512K or more, printer, and external drive. $395. Future Design, 13681 Williamette Drive, Westminster, CA 92683. NCP (Dec '85) ★'85 Eddy

Timeslips III ♦♦♦♦½
tracks billing and expense information for people who charge by the hour. DA turns the clock on and automatically bills a client when a session is over. Version 1.06. Requires 512K and two disk drives. Mac II and MultiFinder friendly. $199.95. North Edge Software, 239 Western Ave., Essex, MA 01929. NCP (Sept '88) ★'88 Eddy

Personal Finance

Dollars & Sense ♦♦♦
is a bookkeeping program. Easy to use, with a good manual and excellent on-screen help. Will handle up to 120 separate accounts or money categories. Uses standard double-entry accounting techniques. Will work on 128K. $149.95. Monogram, 8295 S. La Cienega Blvd., Inglewood, CA 90301. CP (Mar '87)

MacInTax ♦♦♦♦♦
is an excellent tool for preparing tax forms. Intuitive, easy-to-use. Accepts data from leading personal-finance programs. Good built-in help. Liberal upgrade policy for current owners. California forms set also available. $119 federal; $65 California. SoftView, 4820 Adohr Lane, Suite F, Camarillo, CA 93010. NCP (Mar '87) ★'86 Eddy

MacMoney ♦♦♦♦
is a financial manager that uses information gleaned from your checks and deposit slips. Produces a variety of reports and graphs. Version 3.1 reviewed. Requires 512KE and printer. $119.95. Survivor Software, 11222 La Cienega Blvd., Inglewood, CA 90304. NCP (July '88) ★'86 Eddy

Managing Your Money ♦♦♦♦
is a feature-laden personal-accounting system with added financial and time-management functions. Uses double-entry accounting. Too-cute documentation. Version 2.0. $219.95. MECA Ventures, 355 Riverside Ave., Westport, CT 06880. Requires 1 megabyte, 128K or later ROMs. NCP. (Apr '89)

Quicken ♦♦♦♦♦
helps you write checks, then keeps a ledger showing you where your money goes. Tax information is generated automatically. Version 1.0. Requires 512K and printer. $49.95. Intuit, 540 University Ave., Palo Alto, CA 94301. NCP (Nov '88) ★'88 Eddy

Wall Street Investor ♦♦♦♦
spots stock market trends. Downloads information from an electronic service. Good charting ability. Previously known as Market Pro. Version 3.0. Requires 1 megabyte, two 800K drives or hard disk, Hayes-compatible modem, and an I.P. Sharp account. $695. Pro Plus Software, 2150 E. Brown Road, Mesa, AZ 85203. NCP (Oct '88)

MINIFINDERS

Databases

C.A.T. ♦♦♦♦
is a dedicated relational database for managing contacts, activities and time. Links between types of data make it easy to keep track of important people and events. $399.95. Chang Laboratories, 5300 Stevens Creek Blvd., San Jose, CA 95129. NCP (Nov '87)

dBASE Mac ♦♦♦♦
is a relational DBMS that includes a structured programming language to develop stand-alone applications. Palette icons as alternatives to menu commands will help novice users. Requires 1 megabyte or more. $495. Ashton-Tate, 20101 Hamilton Ave., Torrance, CA 90502-1319. NCP (Feb '88)

Double Helix II ♦♦♦♦½
is a powerful database that supports a multiuser environment with an upgrade. Uses an icon-based development system for easy creation of databases. $595, single-user version. Odesta, 4084 Commercial Blvd., Northbrook, Ill 60062. NCP (Apr '88)

EndNote ♦♦♦♦½
provides database management for biblicgraphies. Designed to work in conjunction with a word processor. Allows for formatted in-text citations to be pasted directly into a word-processing document and then creates a bibliography from the citations. Version 1.0 reviewed. $129. Niles & Associates, 2200 Powell St., Suite 765, Emeryville, CA 94608. NCP (Feb '89)

FileMaker II ♦♦♦♦½
is a multiuser version of the all-time best flat-file manager for the Macintosh. New features include more flexible layouts, hierarchical menus, and color on the Mac II. Version 1.0. Requires 1 megabyte with two 800K drives or a hard-disk drive. $299. Claris, 440 Clyde Ave., Mountain View, CA 94043. NCP (Dec '88)

4th Dimension ♦♦♦♦½
is a versatile tool that creates stand-alone relational databases. Design and layout environments allow easy linking of information. Robust. Pascal-like procedure language. $695. ACIUS, 20300 Stevens Creek Blvd., Cupertino, CA 95014. NCP (Nov '87) ★'87 Eddy

FoxBASE+/Mac ♦♦♦♦½
is a relational database that can read unmodified dBASE III PLUS applications created in the MS-DOS world. Amazingly fast. Good implementation of dBASE on the Mac. Version 1.0. Requires 1 megabyte. Mac II and MultiFinder friendly. $395. Fox Software, Inc., 118 W. South Boundary, Perrysburg, OH 43551. NCP (Sept '88) ★'88 Eddy

MBA Series ♦♦♦♦
is a set of 11 multiuser business applications that run under ACIUS' 4th Dimension. It's also an automated programming environment for developing additional 4th Dimension applications. Requires 1 megabyte and 4th Dimension. $189 per application, unlimited users. Generation Four, 3232 San Mateo N.E. #199, Albuquerque, NM 87110. NCP (May '89)

Omnis 3 ♦♦♦♦
is a power database, featuring concurrent multiple-file management. Can handle 24 files, 12 at a time, and is fully relational. Create custom environments, including user-defined menus, commands, and dialog boxes. $495. Blythe, 2929 Campus Drive, San Mateo, CA 94403. NCP (Mar '86)

OverVUE ♦♦♦♦½
is a power-packed relational database that has extensive sorting, summarizing, and report-generation capacity. Has macros and a charting function. Good manual. It can exchange files with a wide variety of other programs (including IBM software). $295. ProVUE, 222 22nd St., Huntington Beach, CA 92648. NCP (Nov '85) ★'85 Eddy

Pro-Cite ♦♦♦½
is a complete database-management system for bibliographies. Almost unlimited flexibility in the formatting of bibliographies. Full-featured search and sort capabilities. Version 1.3 reviewed. Requires 512KE. $395. Personal Bibliographic Software, Inc., P.O. Box 4520. Ann Arbor, MI 48106. NCP (Feb '89)

Record Holder Plus ♦♦♦♦
is a flexible, easy-to-use, form-oriented data manager. Setup is particularly simple, and the search features are powerful. $69.95. Software Discoveries, 137 Krawski Drive, South Windsor, CT 06074. NCP (Apr '86) ★'87 Eddy

Reflex Plus ♦♦♦♦
is a relational database with "smart" entry and report design, but no overall programming facility. Simple to set up, yet fast. Graphic capabilities are quite limited. Version 1.0 reviewed. $279. Borland/Analytica, 4585 Scotts Valley Drive, Scotts Valley, CA 95066-9987. NCP (Feb '88)

Writer's Workshop ♦♦♦½
maintains orderly records for writers. It can track manuscripts, income, and publisher. Based on and includes Runtime Helix. $99.95. Futuresoft System Designs, P.O. Box 132, New York, NY 10012. NCP (Apr '87)

Number Crunching

Data Desk Professional ♦♦♦♦½
lets you visually look at statistics with more ease than any comparable Macintosh program. Plots variables so you can analyze data to see what patterns develop. Version 2.0. Requires 1 megabyte and two 800K disk drives or hard disk. $495. Odesta, 4084 Commercial Ave., Northbrook, IL 60062. NCP (Nov '88)

Excel ♦♦♦♦♦
was the first power spreadsheet on the Mac. Has 256-column-x-6,384-row capability. Features include a powerful macro function (with a recorder to make creation simple) and elaborate charting facilities. 512K or more and external drive required. $395. Microsoft, 16011 N.E. 36th Way, Redmond, WA 98073-9717. NCP (Prem) ★'85 Eddy

MacCalc ♦♦♦♦
is a fast, competent, full-featured spreadsheet with impressive built-in functions, font control, on-line help, ability to expand columns and rows, and read/write SYLK or WKS files. The worksheet is 125 columns by 999 rows. A very flexible, pure spreadsheet. $139. Bravo Technologies, P.O. Box 10078, Berkeley, CA 94709-0078. (Sept '86) ★'86 Eddy

MacSpin ♦♦♦♦
is a unique and powerful program for graphic-data analysis. Handles multivariate data in a highly visual manner. Nothing else like it for any micro. $199.95. D2 Software, P.O. Box 9546, Austin, TX 78766-9546. CP (June '86) ★'87 Eddy

MacSQZ! ♦♦♦♦♦
compresses Excel files up to 88 percent of their actual size. Good to free up disk space. Also contains password utility. MultiFinder hostile. Requires Excel. Version 1.01. $79.95. Turner Hall Publishing, 10201 Torre Ave., Cupertino, CA 95014. NCP (Aug '88)

Mathematica ♦♦♦♦½
is a powerful tool for doing all kinds of math. Offers arbitrary-precision numeric calculations, symbolic computation, PostScript graphics, and programmability. Version 1.03. Requires 1 megabyte or more and a hard-disk drive. Requires 2 megabytes to run kernel. $495, $795 for the Mac II version. Wolfram Research, P.O. Box 6059, Champaign, IL 61821. NCP (Nov '88) ★'88 Eddy

MathView Professional ♦♦♦♦
is an equation solver that combines two- and three-dimensional plotting with routines for matrices, differential equations and integrals, complex numbers, and the like. Interface leaves a lot to be desired. Version 1.0. Requires 512KE and two disk drives. Mac II and MultiFinder friendly. $249.95. BrainPower, 24009 Ventura Blvd., Calabasas, CA 91302. NCP (Sept '88)

Microsoft Works ♦♦♦♦½
has been the integrated program of choice for years, and version 2.0 shouldn't change that. Package includes word processing, spreadsheet, database, telecommunications, and object-oriented graphics. Supports color. Excellent value. May be all the software you'll ever need. Version 2.0 reviewed. Requires Mac Plus or higher, two 800K drives. $295. Microsoft, 16011 N.E. 36th Way, Box 97017, Redmond, WA 98073. NCP (May '89)

Microtemp Financial Calculators ♦♦♦½
is a set of worksheets for Excel and Works that calculates common personal and small business financial problems. Includes cash flow, real estate and rate of return calculators. Version 1.0. $79.95. Microtemp, P.O. Box 1208, Santa Rosa, CA 95402. NCP (Aug '88)

Mindsight ♦♦♦♦
is a professional level, decision-support, and business planning package. Can work with IFPS on mainframes and is able to transmit models in both directions. Powerful and easy to use. Requires 512K or more. $249. Execucom Systems, P.O. Box 9758. Austin, TX 78766. CP (Dec '86)

Parameter Manager Plus ♦♦♦♦
is a data manager, incorporating integrated scheduling, statistics, and graphics. Solid spreadsheet, calendar, and database functions. Can import data from Excel or Lotus 1-2-3. $595. Rebus, 2330-B Walsh Ave., Santa Clara, CA 95051. NCP (July '87)

Ragtime ♦♦♦♦
is an "Integrated Page Processor" with text, graphics, and built-in spreadsheet. Flow text automatically from one frame to another. Spreadsheet has a full set of functions. Excellent, easy-to-use program. Requires 512K or more. $395. Orange Micro, 1400 N. Lakeview, Anaheim, CA 92807. NCP (Aug '88)

StatView 512+ ♦♦♦♦♦
is a very intuitive statistical-analysis program with tools to help you understand any set of data. Holds data in a spreadsheet-like form. Full-featured, fast, and accurate. Extremely wide range of analyses possible. Requires 512K or more and 800K of disk space to operate. $349.95. BrainPower, 24009 Ventura Blvd., Calabasas, CA 91302. NCP (Dec '86)

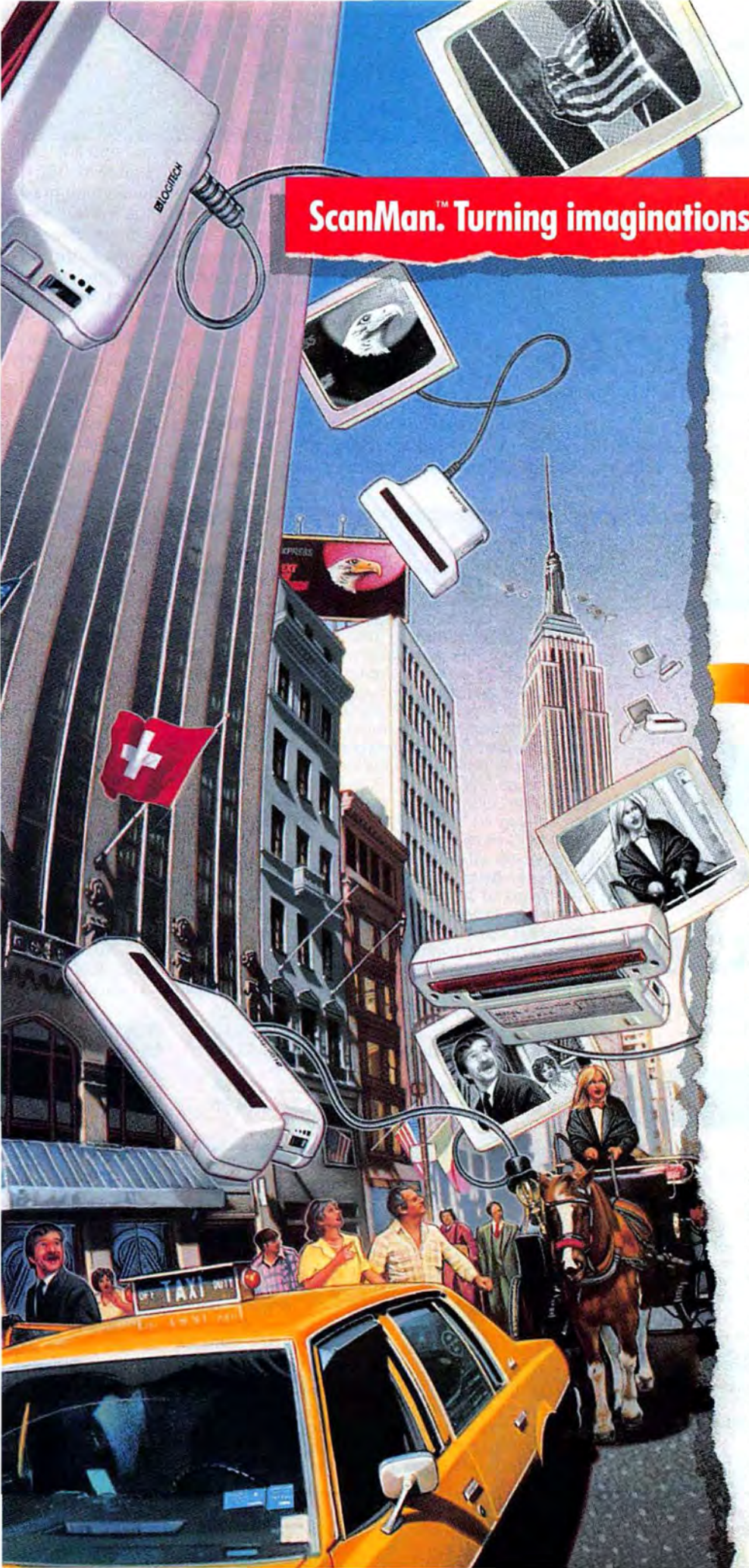
StatView II ♦♦♦♦♦
is a remarkably complete data-analysis package. Essential for any kind of descriptive, comparative, or multivariate statistics. Works in color on the Mac II. Version 1.01. Requires Mac II or SE equipped with 68020 and 68881 math coprocessor; two 800K disk drives or hard disk. $495. Abacus Concepts, 1984 Bonita Ave., Berkeley, CA 94704. NCP (Oct '88)

Trapeze ♦♦♦♦½
is a powerful presentation worksheet that combines mathematical functions and graphic representation. The interface, which consists of an icon bar, can be awkward to use. Mac II and color supported. Version 2.0. $395. Access Technology, 555C Heritage Harbor, Monterey, CA 93940. NCP (Dec '87)

101 Macros for Excel ♦♦♦♦
offers all the power of macros without having to learn how to write them. Some gems include a macro to transpose rows and columns, and a search-and-replace macro. Requires Excel. $69.95. Macropac International, 19855 Stevens Creek Blvd., Cupertino, CA 95014. NCP (July '88)

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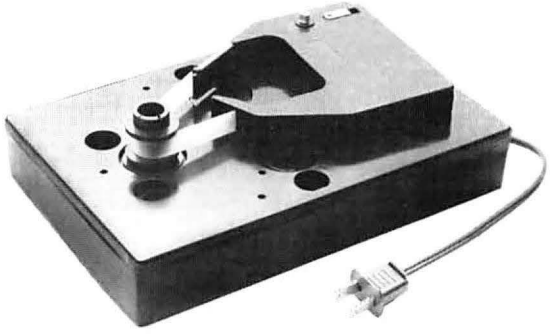
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enables you to customize your own clip-art disk. The border collection is the best package in terms of quality of art. Other packages available. Requires a program that reads Encapsulated PostScript Format (EPSF) files. $129. Artware Systems, 3741 Benson Drive, Raleigh, NC 27609. NCP (Aug '88)

Canvas 2.0 ♦♦♦♦♦
is a rich drawing/painting program, featuring full Bezier curves, cutting and joining of polygons, skewing, perspective and distortion, auto-dimensioning, area and perimeter calculation, auto-tracing of bit maps, and full color support. Creates and edits high-resolution bit maps to 2,540 dpi. Slightly less powerful DA version available. Requires 1 megabyte, two 800K floppies, System 6.0. $299. Deneba Software, 3305 N.W. 74th Ave., Miami, FL 33122. NCP (Apr '89)

Click & Clip ♦♦♦
offers seasonal graphics packages. Of the two quarterly editions released, the Spring '88 package is the better collection. Requires a program that reads Encapsulated PostScript Format (EPSF) files. $39.95 per edition. Studio Advertising Art, P.O. Box 18432-52, Las Vegas, NV 89114. NCP (Aug '88)

Comic Strip Factory ♦♦♦♦½
is an assembly program for creating comic strips. Includes a database of parts for various characters and backgrounds for panels. Good text editing in balloons. Can import and export in MacPaint format. $69.95. Foundation Publishing, 5100 Eden Ave., Suite 307, Edina, MN 55436. NCP (Dec '87)

Cricket Draw ♦♦♦½
is an object-oriented drawing program that will produce stunning, high-quality output. Designed to print on PostScript-compatible devices such as the LaserWriter. $295. Cricket Software, 40 Valley Stream Parkway, Malvern, PA 19355. NCP (May '87)

Cricket Graph ♦♦♦♦♦
easily generates 12 graph types. Multiple windows can be displayed. Graph prints in up to eight colors with up to 16 patterns. Self-generating macro formatting. Switcher, HFS, LaserWriter, and plotter compatible. $195. Cricket Software, 40 Valley Stream Parkway, Malvern, PA 19355. NCP (June '86) ★'86 Eddy

Cricket Presents ♦♦♦♦
is a presentation tool with strong emphasis on graphics. Good master template. Lacks import capability for text. Version 1.0. Requires System 4.2 or later. $695. Cricket Software, 40 Valley Stream Parkway, Great Valley Corporate Center, Malvern, PA 19355. NCP (Nov '88)

Crystal Paint ♦♦♦♦
creates an electronic kaleidoscope. It is MacPaint's Brush Mirrors gone wild in a small, simple, yet wonderful application. Does not work in color on Mac II. MultiFinder friendly. Requires 512K or more. $49.95. Great Wave Software, 5353 Scotts Valley Drive, Scotts Valley, CA 95066. NCP (Feb '88)

Curator ♦♦♦♦½
catalogs your art and graphics so it's easy to see what's what and where it is. Supports PICT, TIFF, EPSF, PostScript, MacPaint, and more. Changes creator types. Requires 512K and an 800K drive. $139.95. Solutions International, 30 Commerce St., Williston, VT 05495. NCP (Sept '88)

DeskPaint ♦♦♦½
is a full-blown paint program as a DA. Allows you to spruce up a graphic while in another application. Imports and exports MacPaint and TIFF images. Great for DTP, but not enough features to rival the leaders in paint programs. Zedcor, 4500 E. Speedway, Tucson, AZ 85712-5305. NCP (Mar '88)

EZ Draft ♦♦♦
is a high-level CAD application. Does things usually found only on minicomputer programs. Uses "pop-up" menus to supplement a full set of pull-down menus. Comes with an additional set of printer/plotter/monitor drivers. A real powerhouse. $1,995. $500 for IEGS module to link to other CAD programs. Bridgeport Machines, 500 Lindley St., Bridgeport, CT 06606. CP (May '87)

FastForms! Construction Kit ♦♦♦♦♦
is both a fast and efficient business forms creator (a drawing program) and a specialized application (and DA) to fill out the data fields in your forms. $149 (U.S.). Shana Enterprises, Advanced Technology Center #105, 9650-20 Ave. Edmonton, Alberta T6N 1G1, Canada. NCP (Nov '87)

Fluent Fonts ♦♦♦♦
is a two-disk collection of fonts. Includes 49 different items. All install easily in user systems. Most are well executed and some are extraordinarily nice. This is a real bargain for font lovers. $49.95. Casady-Ware, P.O. Box 223779, Carmel, CA 93922. NCP

FONTastic Plus ♦♦♦♦½
lets you customize and create bit-mapped fonts. Characters are easily added or modified. Version 2.01 edits larger fonts and supports NFNTs. Requires 512K. $99.95. Altsys Corp., 720 Avenue F, Suite 109D, Plano, TX 75074. NCP (May '89)

Fontographer ♦♦♦♦½
is a complex but excellent laser-font creator. The fonts created have 300 bit-per-inch resolution. The fonts are actually downloadable PostScript files. $395. Altsys, P.O. Box 865410, Plano, TX 75086. CP

FontSizer ♦♦♦♦½
creates high-quality screen fonts of any downloadable PostScript typeface in sizes up to 127 points. Excellent utility for producing large font sizes with true WYSIWYG. Requires 1 megabyte, PostScript printer, and fonts. Version 1.7. $99.95. U.S. MicroLabs, 1611 Headway Circle, Building No. 3, Austin, TX 78754. NCP (Apr '89)

FreeHand ♦♦♦♦½
greatly simplifies the drawing of curves, the use of layers and text handling when manipulating PostScript graphics. And it works in color on the Mac II. Requires 1 megabyte and two disk drives. $495. Aldus, 411 First Avenue S., Seattle, WA 98104. NCP (Aug '88)

GraphicWorks 1.1 ♦♦♦♦
is a powerful drawing and painting program that creates high-resolution bit maps. Easels contain graphics, balloons hold text, and both reside on panels. Graphic primitives are now a separate tool. $149.95. Mindscape, P.O. Box 1167, Northbrook, IL 60065. NCP (Oct '87)

GraphistPaint II ♦♦♦
is a powerful color drawing program but has some rough edges. Cumbersome drawing environment yet very good at combining and retouching existing drawings. Version 1.0 reviewed. Mac II with 2 megabytes and 8-bit video card required. $495. Aba Software, Inc., 41 Great Valley Parkway, Malvern, PA 19355. NCP (Apr '89)

Illustrator 88 ♦♦♦♦½
is a professional-level graphics program from the people who defined the PostScript language. Uses templates for precise drawing and detailed artwork. Requires 1 megabyte. $495. Adobe Systems, 1585 Charleston Road, Mountain View, CA 94039. NCP (Oct '88) ★'88 Eddy

Image Club ♦♦♦♦♦
is an overwhelming collection of EPS clip art available on disk and CD-ROM. Comes with a well-designed catalog of images. Requires a program that reads Encapsulated PostScript Format (EPSF) files. $99. Image Club Graphics, 1902 11th St. SE, Calgary, Alberta, Canada T2G 3G2. NCP (Aug '88)

ImageStudio ♦♦♦♦½
puts a photo-retouching lab on the desktop. Editable brushes let you modify digitized images in 65 gray levels. Version 1.0 reviewed. Requires 1 megabyte or more and two 800K disk drives. Mac II and MultiFinder friendly. $495. Letraset USA, 40 Eisenhower Drive, Paramus, NJ 07653. NCP (June '88)

Images with Impact! ♦♦♦♦♦
brings clip art out of the turn-of-the-century woodcut style and into a modern graphic sensibility. "Graphics and Symbols 1" is the first in a series. Requires a program that reads Encapsulated PostScript Format (EPSF) files. $99.95. 3G Graphics, 11410 N.E. 124th St., Kirkland, WA 98034. NCP (Aug '88)

Japanese Clip Art ♦♦♦♦½
is a two-disk set of extraordinary Japanese clip art. Consists of MacPaint documents and separate fonts. Volume I, Heaven, covers mythological subjects; Volume II, Earth, has secular subject matter. $79.95 each volume; $149.95 each set. Qualitas Trading, 6907 Norfolk Road, Berkeley, CA 94705. NCP (Apr '87)

Lasertalk ♦♦♦♦♦
is a PostScript programming tool that establishes interactive contact with laser printers. Preview window and on-line help make it a powerful tool. Requires 1 megabyte or more and a PostScript Printer. $249. Emerald City Software, P.O. Box 2103, Menlo Park, CA 94026. CP until registered (May '88)

LetraStudio ♦♦♦♦
is a type-customization program for creating headlines, logos, signs, and other display type. Predefined envelopes let you create unique distortion effects. Works only with LetraFonts, which in turn are accessible only through the program. Version 1.0. Requires 1 megabyte and hard disk. $495, plus $75 per font. Letraset USA, 40 Eisenhower Drive, Paramus, NJ 07653. Fonts are copy-protected. (May '89) ★'88 Eddy

MacCalligraphy ♦♦♦½
simulates brush painting. User-designed Seals and Touches enable you to design your own signature tool and the style of brush you use. Takes some getting used to. $175. Qualitas Trading, 6907 Norfolk Road, Berkeley, CA 94705. NCP (Feb '88)

MacDraft ♦♦♦♦
is an object-oriented graphics program. It sports advanced features such as variable scaling, single-degree rotation, complex arcs, auto dimensioning, and variable zoom/reduction. $269. Innovative Data Design, 2280 Bates Ave., Concord, CA 94520. NCP (Feb '86)

MacDraw II ♦♦♦½
updates the venerable object-oriented draw program. Adds dithered and color patterns in its own documents, but doesn't support color in the PICT II format. Version 1.0. Requires 1 megabyte, and two 800K disk drives or hard disk. $395. Claris, 440 Clyde Ave., Mountain View, CA 94043. NCP (Nov '88)

MacGraphics ♦♦♦
is an overwhelming collection of bit-mapped clip art—13 thematic disks containing 10 megabytes of art. Unfortunately, most pictures are full-page, and reproduction quality suffers when they are reduced. Version 3.0 reviewed. $225. GoldMind Publishing, 12155 Magnolia Ave., Suite 3-B, Riverside, CA 92503. NCP (Jan '89)

MacPaint II ♦♦♦½
hasn't lost its shine after all these years. Version 2.0 supports multiple windows, design templates, and a magic eraser for corrections. It lacks free rotation or distortion talents. Requires 512K and second disk drive. $125. Claris, 440 Clyde Ave., Mountain View, CA 94043. NCP (July '88) ★'85,'87 Eddy

MINIFINDERS

Mac3D ★★★½
is a feature-laden 3-D program with a MacDraw-like interface. PostScript-resolution shading with six variable light sources, user-definable tools, and many more features. Clumsy interface to rotate objects and camera. Version 2.0. $249. Challenger Software, 18350 Kedzie Ave., Homewood, IL 60430. NCP (Jan '87)

MapMaker ★★★★½
is a digital cartographer that charts demographic and marketing information on a geographic basis. Wide variety of maps available — some at an additional cost. Version 3.0. Requires 512K. $349. Select Micro Systems, 40 Triangle Center, Yorktown Heights, NY 10598. NCP (Dec '88)

MGMS: Professional CAD for Macintosh ★★★★
offers more than 200 functions. Very complete, capable program. Groups, Dimension, and Libraries are standard. Sometimes confusing — designed for the experienced, professional CAD user, not the novice. Full plotter support. 512K or more. $799. Micro CAD/CAM, 5900 Sepulveda Blvd., Suite 340, Van Nuys, CA 91411. NCP (Nov '87) ★'87 Eddy

MiniCad ★★★★
is a pro-level CAD package. Vast array of features, many accessible only through Command/Shift/Option key combinations. Works in 2-D or 3-D with easy transition from one to the other. MacDraw-like interface makes it easy to learn and use. Version 3.0. Requires 512K or more. Diehl Graphsoft, 8370 Court Ave., Suite 202, Ellicott City, MD 21043. CP (Oct '87)

Modern Artist 2.0 ★★½
is still an interesting color paint program and has added a few new features, but there's not enough here to justify the substantial price increase. Requires Macintosh II. $495. Computer Friends, 14250 N.W. Science Park Drive, Portland, OR 97229. NCP (Feb '89)

Persuasion ★★★★★
is an outstanding presentation tool with an excellent drawing environment. Extensive auto-templates and color schemes as well as multiple master slides make it easy to turn out presentations quickly. Requires Apple System 4.1 or higher, 1-megabyte Mac Plus or higher, and a hard disk. Version 1.0 reviewed. $495. Aldus, 411 First Ave. S., Seattle, WA 98104. NCP (May '89) ★'88 Eddy

Photon Paint ★★★
is not the equal of Studio/8 or PixelPaint, but it does offer a workable painting environment, multiwindow capability, some interesting special effects, and a lower price. Version 1.1 reviewed. Requires Mac II with color card. $299.95. MicroIllusions, 17408 Chatsworth St., Granada Hills, CA 91344. NCP (May '89)

PictureBase ★★★★½
is a powerful graphic librarian. You can store paint and PICT formatted items and attach keywords for later search and retrieval. $69.95. Symmetry, 761 E. University Drive, Mesa, AZ 85203. NCP (Sept '87) ★'86 Eddy

Pixel Paint ★★★★½
is a color paint program with customizable palettes and a lot of special effects. Slow Open and Save. Requires Mac II, 2 megabytes, and 8-bit video card. $495. SuperMac Technology, 485 Potrero Ave., Sunnyvale, CA 94086. NCP (May '88)

Post Art I ★
is a collection of signed originals on disk. Overall, a pretty useless collection in terms of clip art. Meant for hanging prints on a wall. Requires a program that reads Encapsulated PostScript Format (EPSF) files. $69.95. Olduvai, 7520 Red Road, S. Miami, FL 33143. NCP (Aug '88)

PowerPoint ★★★★
is an easy-to-use desktop presentation tool. Good color schemes. Can send presentations to Genigraphics to produce color 35mm slides. Version 2.0. Requires System 4.1 or later, 1 megabyte, and two 800K drives or hard disk. $395. Microsoft, 16011 N.E. 36th Way, P.O. Box 97017, Redmond, WA 98073-9717. NCP (Aug '87)

The Print Shop ★★★½
makes it easy to create greeting cards, signs, banners, and letterhead. Uses its own special graphics and can import Paint files. Hard-disk users get version 1.02 or later. $79.95. Broderbund, 17 Paul Drive, San Rafael, CA 94903-2101. CP (Sept '87)

Space Edit ★★★½
is a 3-D CAD program. Display shows top, front, side, and axonometric views of an object, all at once or one at a time. Has standard CAD features plus zoom, exploded view, animated flyover. Suppression of hidden lines is very slow. Requires 1 megabyte or more. $625. Abvent, 9903 Santa Monica Blvd., Beverly Hills, CA 90212. CP (July '87)

StandOut! ★★★★
is a presentation program built like a publishing program, with strong text and graphics support. Automatic text flow around graphics objects. Lacks good graphic examples. Version 1.0. Requires 1 megabyte and two 800K drives or hard disk. $395. Letraset, 40 Eisenhower Drive, Paramus, NJ 07652. NCP (Nov '88)

Studio/8 ★★★★★
is a professional-level color paint application for the Mac II. Superior tool set, elegant interface, excellent performance and speed. Version 1.0. Requires Mac II and hard disk; 2 megabytes of RAM recommended. $495. Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. NCP (Jan '89) ★'88 Eddy

SuperPaint ★★★★½
is a powerful, easy-to-use graphics program with all the best features of MacPaint and MacDraw — and then some. LaserBits provides 300-dpi magnification, and there are 40 editable brush shapes. Requires 512K or more. $149.95. Silicon Beach Software, 9580 Black Mountain Road, P.O. Box 261430, San Diego, CA 92126. NCP (Feb '87) ★'87 Eddy

Super 3D ★★★★★
is a high-power 3-D modeling program with an excellent integrated interface. Powerful time-saver. Features include animation, import/export of 3-D worlds as text files. Excellent for art, design, or technical work. Version 1.0. Requires 1 megabyte. $295. Silicon Beach Software, 9580 Black Mountain Road, P.O. Box 261430, San Diego, CA 92126. NCP (Jan '88)

Swivel 3D ★★★★★
quickly forms shaded solids in full color. Casts true shadows onto other objects and can project color graphics onto solids. Objects can be linked as jointed and sliding mechanisms that can be operated without accidental dismantling. It can tween-animate objects or fly your view through a scene, saving frames for playback. Superb object-manipulation interface. Version 1.0. Requires 1 megabyte, Mac Plus, two 800K floppies. $395. Paracomp, 123 Townsend St., Suite 310, San Francisco, CA 94107. NCP (Mar '89)

TrueForm ★★★★½
takes a scanned image of a paper form and turns it into an electronic equivalent, complete with fields for entering data. It can automatically sum numeric fields. Requires external 800K drive. $495; run-time version, $295. Spectrum Digital Systems, 2702 International Lane, Madison, WI 53704-3122. NCP (May '88)

VersaCAD ★★★★
is a powerful CAD program that doesn't show any of its MS-DOS roots. Excellent element manipulation, full plotter support. Library user interface is crude. Requires 1 megabyte or more. $1,995. VersaCad, 2124 Main St., Huntington Beach, CA 92648. NCP (July '88) ★'88 Eddy

VideoWorks II ★★★★½
is an easy-to-use animation tool — the best available on the Mac. Has an Overview mode that acts as a slide show carousel for presentations. Works in color on the Mac II. $195. Requires 1 megabyte or more and an 800K drive. MacroMind, 1028 W. Wolfram, Chicago, IL 60657. NCP (Mar '88) ★'85, '87 Eddy

VideoWorks II Accelerator ★★★★
compiles VideoWorks II movies to make them run more smoothly. Compensates for the QuickDraw screen display. Version 1.0. Requires 1 megabyte, VideoWorks II; hard-disk drive recommended. $195. MacroMind, 1028 W. Wolfram, Chicago, IL 60657. NCP (Dec '88)

VideoWorks II Clip Animation ★★★★
Clip Charts, Black and White Movies, and Clip Sounds are four separate aids to help you construct movies and business presentations. Requires VideoWorks II. $49.95 to $59.95. MacroMind, 1028 W. Wolfram, Chicago, IL 60657. NCP (Aug '88)

WetPaint ★★★★★
consists of two three-disk volumes of very high quality clip art. Also includes the Art Roundup DA, a good art browser/editor. Volume 1 or 2, $39 each; both volumes, $59. Available in PictureBase format for $15 extra per volume. Dubl-Click Software, 18201 Gresham St., Northridge, CA 91325. NCP (Sept '87)

World-Class Fonts! ★★★★½
comes in two volumes of three disks each. Includes all the Mac the Knife fonts and a lot more, including two useful utilities. This is now the best collection of ImageWriter fonts available. Each volume: $39; both volumes: $59. Dubl-Click Software, 18201 Gresham St., Northridge, CA 91325. NCP (Dec '86)

Desktop Publishing

DTP Advisor ★★★
combines a HyperCard-based tutorial on publishing with a project-management system. Beautifully designed but better off as a book. Requires 1 megabyte and HyperCard 1.2. Version 1.0. $79.95. Broderbund Software, 17 Paul Drive, San Rafael, CA 94903-2101. NCP (Apr '89)

Interleaf Publisher ★★★½
is a speedy multiuser layout system for producing large, complicated documents. Version 3.5 has an improved user interface, but it still suffers from poor font management. Requires Mac II with 5 megabytes of RAM and hard disk. $2,495. Interleaf, 10 Canal Park, Cambridge, MA 02141. NCP (Apr '89)

MacTeX ★★★½
is the TeX environment of choice for hard-core TeX users on the Macintosh. Very intimidating for others. Painfully slow and visually unattractive. Version 2.0. Requires 1 megabyte or more. $750. FTL Systems, 234 Eglington Ave. E., Toronto, Ontario M4P 1K5, Canada. NCP (Apr '88)

PageMaker ★★★★★
retains its pasteup approach to page layout. New features include automatic text flow, style sheets, and spot color support. The standard keeps getting better. Version 3.0. Requires 1 megabyte or more and a hard disk. $595. Aldus, 411 First Ave. S., Seattle, WA 98104. NCP (Aug '88) ★'85, '87, '88 Eddy.

Portfolio: Designs for Newsletters ★★★★
provides 21 templates for newsletters with preset columns, headlines, graphics, and captions. Documentation provides excellent tutorial in page design. Requires 512KE or higher, PageMaker. $99. Aldus, 411 First Ave. S., Seattle, WA 98104. NCP (May '87)

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Publishing Packs ★★★½
bundle together three Adobe typefaces that work well for a particular publishing project. The packages offer substantial savings over purchasing the typefaces individually, and the documentation has useful information on typeface characteristics. Newsletters, $395; Forms & Schedules, $475; Presentations, $475. Adobe Systems Inc., 1585 Charleston Road, Box 7900, Mountain View, CA 94039. NCP (Feb '89)

QuarkStyle ★★★★
is a collection of 72 designer-created templates for "instant" desktop publishing. The templates, which cover the gamut from business cards to newsletters, let you concentrate on a page's contents rather than its appearance. Version 1.0. Requires 1 megabyte and hard disk. $295. Quark, 300 S. Jackson, Suite 100, Denver, CO 80209. NCP (Feb '89)

QuarkXPress ★★★★½
is a powerful page-layout program, with 24-bit color, style sheets, and search and replace of text attributes. Also does four-color separations. Layout is done using text and picture boxes, which improves control but is difficult to master. Version 2.0. Requires more than 1 megabyte as well as a hard disk. $795. Quark, 300 S. Jackson, Suite 100, Denver, CO 80209. CP until registered. (Jan '89)

Ready,Set,Go! 4 ★★★★½
has an elegant interface and excellent manual. Powerful text wraparounds, fast word processor with hyphenation and spelling check and custom style sheets. Requires 1 megabyte or more. $495. Letraset, 40 Eisenhower Drive, Paramus, NJ 07652. NCP (Feb '88) ★'86 Eddy

Springboard Publisher ★★★
combines page layout, word processing, and graphics capabilities in one easy-to-learn program. Too limited for serious desktop publishing but cost-effective for simple documents. Version 1.06 reviewed. Requires 1 megabyte. $199.95. Springboard Software, 7808 Creekridge Circle, Minneapolis, MN 55435. NCP (May '89)

TeXtures ★★★
is an implementation of TeX, the big daddy of typesetting programs. Good for people trained on mainframes in the early days. Otherwise very sticky with a high learning curve. Version 1.0. Requires 512K or more. $495. Blue Sky Research, 534 S.W. Third Ave., Portland, OR 97204. NCP (Apr '88)

Communications

AppleShare ★★★★
is the file sharer marketed by Apple. Software-based, AppleShare requires you to dedicate a Mac and a hard disk to run it. Allows users on the network to protect things from other users on the folder level. Interface to network is provided at a revised Finder. $799. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. NCP (May '87)

ComServe ★★★★
allows you to share a Hayes-compatible modem over an AppleTalk network. You can call out, but you can't call in. Works with most telecommunications packages. $195 per server. Infosphere, 4730 S.W. Macadam Ave., Portland, OR 97201. CP (Feb '88)

Desktop Express ★★★½
is a simple-to-use, semiautomated program for using MCI Mail and Dow Jones News/Retrieval. Performance is traded off for ease of use. Requires 512K or more. $149. Dow Jones, P.O. Box 300, Princeton, NJ 08543. NCP (Jan '88)

inBox ★★★★½
is an easy-to-use mail system. It's called up from a DA. Has a very slick interface. Dedicated Mac not required. $350 for starter set, which includes one Administrator disk and three Connection disks. Additional Connections cost $125 each. TOPS, 950 Marina Village Parkway, Alameda, CA 94501. NCP (May '87) ★'86 Eddy

inTalk ★★★★½
comes with its own communications command language able to do unattended sessions. Supports Xmodem and MacBinary. Has a macro key function. Many sample setup documents and command language files provided. $195. Palantir, 12777 Jones Road, Houston, TX 77070. NCP (Prem)

LapLink Mac ★★★★
quickly transfers data to and from the MS-DOS and Mac environments. Kit contains a cable and software. Control of transfer is on the IBM side. Version 1.2. Requires 512K. $139.95. Traveling Software, 19310 North Creek Parkway, Bothell, WA 98011. NCP (Aug '88)

MacTerminal ★★½
provides basic telecommunications and terminal emulation. Has neither macros nor any sort of auto redial/auto log-on capability. Best for those needing faithful VT100 or IBM 3278 emulation — it is superb at those. $125. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. NCP (Prem)

MacWorkStation ★★★★
is a development environment and communications program that accesses custom mainframe applications through the Macintosh interface. Modular design allows for expandability. Mac II and MultiFinder friendly. Version 3.0. $2,500 for internal use license; $5,000 for commercial use license. Apple Software Licensing, 20525 Mariani Ave., Cupertino, CA 95014. NCP (Oct '88)

MicroPhone II ★★★★½
is a high-powered terminal program that's easy enough for novices. Very powerful command language allows full automation of communications if desired. $295. Software Ventures, 2907 Claremont Ave., Berkeley, CA 94705. NCP (Jan '89) ★'86 Eddy

Microsoft Mail ★★★★½
is an electronic mail system that runs under AppleTalk. Supports file transfers across the mail system. Full on-line help facility. Also includes "While you were out" messages. Desk accessory based. Prices determined by number of users licensed. One to four users, $299.95; five to ten users, $499.95; 11 to 20 users, $749.95; 21 or more users, $949.95. Microsoft, 16011 N.E. 36th Way, Redmond, WA 98073-9717. NCP (May '87) ★'87 Eddy

PC MacTerm/pcAnywhere III ★★★★
are two programs that work together to take control of an MS-DOS machine from the Mac keyboard. Versions: PC MacTerm 1.1; pcAnywhere III 3.0. Requires 512K; System 4.1 or later; 128K IBM PC compatible and MS-DOS 2.1 or later. PC MacTerm, $99; pcAnywhere III, $145. Dynamic Microprocessor Associates, Inc., 60 E. 42nd St., New York, NY 10165. NCP (Jan '89)

Red Ryder ★★★★★
is a full-featured telecommunications program that supports MacBinary, Xmodem, and Kermit. Has big-screen support, auto procedure creator, and up to 30 keyboard macros. Version 10.3 reviewed. $80. Freesoft, 150 Hickory Drive, Beaver Falls, PA 15010. NCP (Jan '89) ★'87 Eddy

Smartcom II ★★★★★
balances power and ease of use. Capable of unattended operation and has a powerful command language. The fastest screen updating available can keep up even at 9,600 baud. The large-screen buffer can easily be archived. Version 3.0 reviewed. $149. Hayes, 5923 Peachtree Industrial Blvd., Norcross, GA 30092. NCP (Jan '89) ★'85 Eddy

TOPS ★★★★½
is a file server designed to network computers with different operating systems. Supports Macs, MS-DOS compatibles, and UNIX. Access to files and subdirectories is transparent to the user; they appear as Mac folders. Only handles ASCII or Text files. $249 for Mac version. TOPS, 950 Marina Village Parkway, Alameda, CA 94501. Serial number protected. (May '87) ★'87 Eddy

VersaTerm-Pro ★★★★½
is a very powerful terminal program with several special features. Does one of the best VT100 emulations available and specializes in high-quality Tektronix 4014 and 4105 emulation. A pro's tool. Requires 512K or more. $295. Peripherals, Computers & Supplies, 2457 Perkiomen Ave., Mount Penn, PA 19606. NCP (Apr '87)

Word Processors

ArchiText ★★★★
is a text processor with many hypertext capabilities as well as the ability to include graphics. "Nodes" of text are accessed by means of different "maps." Very powerful. Version 1.0 reviewed. Requires 1 megabyte. $349.95. Brainpower, 24009 Ventura Blvd., Suite 250, Calabasas, CA 91302. NCP (Feb '89)

Document Compare ★★★
allows users to compare any two MacWrite 4.5, ASCII, or MDS documents. Differences in spelling, punctuation, formatting, and wording are detected. Documents can be printed out with differences highlighted. $99. Legalware, 33 Young St., Toronto, Ontario M5E 1S9, Canada. NCP (May '86)

Document Modeler ★★★★½
can automate much of a professional office's correspondence. Comes in two parts: Template Maker and Document Maker. Initial setup requires time and is complex. $299.95. Legalware, 33 Young St., Toronto, Ontario M5E 1S9, Canada. NCP (Mar '87)

Doug Clapp's Word Tools ★★★★
is a useful punctuation and style-editing program. It won't turn you into a Proust, but it will help you make your writing cleaner and clearer. Word counts among different formats show discrepancies, but not to worry. Requires 512K or more. $79.95 Aegis Development, 2125 Pico Blvd., Santa Monica, CA 90405. NCP (Sept '87)

Expressionist ★★★★★
is a powerful DA that allows you to create complex mathematical equations from within an application. Equation manipulation has never been easier. $79.95. Allan Bonadio Associates, 1579 Dolores St., San Francisco, CA 94110. NCP (July '87)

Feima ★★★½
allows users to create their own Chinese characters. This Chinese word processor follows the Mac interface more closely than Brushwriter. Lets you create your own characters for those that aren't included in the dictionary. Version P reviewed. Requires 512K or higher. $585. Wu Corp., P.O. Box 699, Avon, CT 06001. CP (May '89)

FullWrite Professional ★★★★
combines outlining and word processing with page layout and drawing. Its many features translate into sluggish performance unless you have a lot of extra RAM. Impressive. Version 1.0. Requires 1 megabyte. Mac II and MultiFinder friendly. $395. Ashton-Tate, 20101 Hamilton Ave., Torrance, CA 90502. NCP (Sept '88)

Graham Speller ★★★
is a DA-based spelling checker. Includes macro feature. Good guesser in interactive mode. Clumsy interface. Version 1.1. $44.95. Graham Software, 8609 Ingalls Circle, Arvada, CO 80003. NCP (Sept '88)

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	ST1096N	83 MB	20 msec
5.25" HH	ST225N	21 MB	65 msec
	ST251N	43 MB	28 msec
	ST277N	64 MB	28 msec
	ST296N	84 MB	28 msec

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MINIFINDERS

Kadmos Greek Font ★★★½
is a full character set of ancient Greek that prints on any PostScript printer. Requires learning new typing skills, but excellent quality makes it worth the effort. $85. Allotype Typographics, 1600 Packard Road, Ann Arbor, MI 48104. NCP (Oct '87)

Kaihin Brushwriter ★★
is a Chinese word processor that fails to support the Mac interface. It has 8,000 characters. You must speak Chinese to use this program. Won't work with System 6.0. Version 2.0 reviewed. Requires 1-megabyte SE or higher, adapter (included) to save and print files. $599 for professional package (reviewed). Pacific Rim Connections, 3030 Atwater Drive, Burlingame, CA 94010. NCP (May '89)

Laser Author ★★★½
is a high-powered, technically oriented word processor. Good math-setting capability. Has style sheets, word count, and page layout capability. $199.95. Firebird Licensees, P.O. Box 49, Ramsey, NJ 07446. NCP (Mar '87)

Liberty Spell Checker ★★★½
is a fast, effective, interactive checker. The dictionary is smaller than average but well chosen. Unfortunately, it has a few misspelled words. $59.95. Data-Pak, 14011 Ventura Blvd., Sherman Oaks, CA 91423. CP (Oct '86)

Lookup ★★★★★
is an on-call, quick, single-word spelling checker. Designed for the way writers really work. Uses the 93,000-word Spellswell dictionary. $49.95. Working Software, P.O. Box 1844, Santa Cruz, CA 95061-1844. NCP (Dec '87)

MacProof ★★★★½
is a grammar, style, and spelling checker that's like having your own personal copy editor. Grammar rules are fixed, and you may not agree with the choices. The program only suggests corrections; it doesn't make them for you. And the checking process can be slow if your document is long. $195 for stand-alone version; $2,500 for networked version. Automated Language Processing Systems, 190 W. 800 North, Provo, UT 84604. NCP (Apr '87)

Macspell+ ★★★★
is a spelling checker that installs as a DA. Works easily with MacWrite 4.5 and 2.2 and Word but has some drawbacks. New version 1.10 just available. Requires 512K or more, two drives or hard disk. $99. Creighton Development, 16 Hughes St., Irvine, CA 92718. NCP

MacWrite ★★★
is starting to show its age. While still a good, basic program, it's outperformed by its competition. Probably enough for the occasional user. Version 5.0 includes Command-key equivalents and spelling checker. Requires 512KE or higher. $125. Claris, 440 Clyde Ave., Mountain View, CA 94043. NCP (June '88) ★'85 Eddy

MergeWrite ★★★½
is a mail-merge program for MacWrite (also works with ASCII files). Program combines names and addresses from a data file into predefined fields in a form letter. Also allows simple conditional IF-THEN-ELSE equations. $49.95. Software Discoveries, 137 Krawski Drive, South Windsor, CT 06074. NCP (Dec '87)

MindWrite ★★★★
integrates outlining and word processing better than anyone. Version 1.1 fixes many problems of the earlier version. Sophisticated search and select options. Unimpressive speed. $295. Access Technology, 555C Heritage Harbor, Monterey, CA 93940. NCP (Feb '88)

Mishu ★★★★½
is a DA that turns MacWrite and Microsoft Word into a Chinese word processor. It will also work with Cricket Draw, HyperCard, or any program that reads PICT files. You must use MacWrite 3.5 or later and Word 3.0 or later. Version 2.1 reviewed. Requires 512K or higher. $89. Xanatech, 20 Fresh Pond Place, Cambridge, MA 02138. NCP (May '89)

QUED/M ★★★★½
is an excellent text editor that saves documents in a form readable by most computers and printers. Doesn't support graphics or multiple fonts. Programming language allows creation of database. Version 2.01. $129. Paragon Concepts, 4954 Sun Valley Road, Del Mar, CA 92014. NCP (Mar '88)

QuickLetter ★★★★½
is a well-designed and well-implemented DA for the creation of letters and envelopes. You can create stationery complete with graphics and maintain an address book including salutations. It's the best envelope creator/printer in any word processor. Version 1.0. Requires 128K. $124.95. Working Software, P.O. Box 1844, Santa Cruz, CA 95061-1844. NCP (Apr '89)

Scriptor ★★★½
is designed for producing standard-format scripts. Starts with a Word document. As you change your Word document, Scriptor will reformat, renumber, and reprint the script. Supports LaserWriter and daisywheel printers. $295. Screenplay Systems, 348 E. Olive Ave., Suite F, Burbank, CA 91502. NCP (May '87)

Sensible Grammar ★★★
corrects some of the more glaring errors that writers make. Also analyzes the word count and structure of sentences to come up with a readability rating. Slow. Version 1.1d. Requires 512K. $99.95. Sensible Software, 335 E. Big Beaver, Suite 207, Troy, MI 48083. NCP (Dec '88)

Spelling Champion ★★★★
is a fast and accurate batch-type spelling checker. Backup feature allows you to undo corrections in a paragraph. Works only with MacWrite 4.5. $39.95. Champion Software, 6617 Gettysburg Drive, Madison, WI 53705. NCP (Oct '86)

Spelling Coach Professional ★★★★½
is a DA and stand-alone spelling checker as well as a thesaurus. Includes dictionary definitions. Off-the-wall phonetic guesses. Version 3.0. $195. Deneba Software, 7855 N.W. 12th St., Suite 202, Miami, FL, 33126. NCP (Sept '88)

Spellswell ★★★★½
is a stand-alone batch spelling checker. Also checks for punctuation and other errors. Good dictionary, thorough checking, simple interface. Weak guessing. Version 2.0. $74.95. Working Software, P.O. Box 1844, Santa Cruz, CA 95061-1844. NCP (Sept '88) ★'86 Eddy

Thunder! ★★★★½
is a DA spelling checker. Includes macro features. Fairly fast, good guessing of misspelled words. Small dictionary. MultiFinder hostile. Version 1.1. $49.95. Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. NCP (Sept '88)

Word Finder ★★★½
is an electronic thesaurus that won't replace your trusty Roget's but is still useful for checking synonyms on the fly. Large, respectively. Version 2.0. Requires 512K. Mac II and MultiFinder friendly. $59.95. Microlytics, 300 Main St., Rochester, NY 14445. NCP (Sept '88)

Word 3.02 ★★★★½
is the most feature-laden word processor around. Also has Microsoft's somewhat unusual view of what the Mac interface is. Esoteric Command-key combinations. Requires 512K or more. $395. Microsoft, 16011 N.E. 36th Way, Redmond, WA 98073. NCP (Mar '88)

WordPerfect ★★★½
is a good choice for offices needing compatibility but not so hot otherwise. Good internal file-management system and macro maker. Uses hidden formatting codes, hierarchical menu system. Requires Mac 512KE, System 4.1 or later. Two 800K disk drives or a hard disk recommended. Not fully compatible with System 6.0. $395. WordPerfect, 1555 N. Technology Way, Orem, UT 84057. NCP (Feb '89)

WorksPlus Spell ★★★★½
is a speedy spelling and hyphenation checker for Microsoft Works. It includes a glossary for abbreviations and time/date stamping. The biggest drawback is its limitation to one program. $59.95. Lundeen & Associates, P.O. Box 30038, Oakland, CA 94604. NCP (Oct '87) ★'87 Eddy

Write ★★★
is a "beginner's" version of Word 3.0. More features than some word processors in its class, but not all of the features work well. Poor value and an expensive upgrade path to Word. $175. Requires 512K or more. Microsoft, 16011 N.E. 36th Way, P.O. Box 97017, Redmond, WA 98073-9717. NCP (May '88)

WriteNow for the Macintosh ★★★★½
has many of the features of MacWrite and then some, including the ability to work in columns. Has built-in spelling checker with 50,000-word dictionary. $175. T/Maker, 1973 Landings Drive, Mountain View, CA 94043. NCP (Mar '87) ★'88 Eddy

HyperCard

Business Class ★★★½
is a HyperCard stack that contains world travel information and itinerary planning. Uses maps to locate countries of interest, but it lacks United States domestic travel information. Requires 1 megabyte or more and HyperCard. $49.95. Activision, 3885 Bohannon Drive, Menlo Park, CA 94025. NCP (Mar '88)

City to City ★★★★
imparts travel information on 31 U.S. cities including details on hotels, restaurants, and nightlife. Helps plan an itinerary. Requires HyperCard, two disk drives, and a printer. $49.95. Activision, 3885 Bohannon Drive, Menlo Park, CA 94025. NCP (Sept '88)

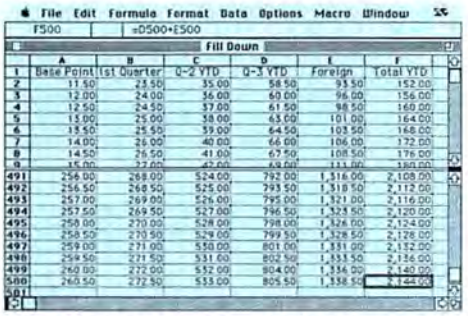
Focal Point ★★★★½
is a HyperCard stack that ties together a calendar, phone log, client accounts, and more in one easy-to-use organizational tool. Requires 1 megabyte or more and HyperCard. $99.95. Activision, 3885 Bohannon Drive, Menlo Park, CA 94025. NCP (Mar '88)

HyperAnimator ★★★★
enables you to create talking heads for your HyperCard stacks. Use MacinTalk or provide digitized sounds. Easy to implement. Version 1.0 reviewed. Requires 1 megabyte, System 6.0, HyperCard. $149.95. Bright Star Technology, Inc., 14450 N.E. 29th, Suite 220, Bellevue, WA 98007. NCP (Feb '89)

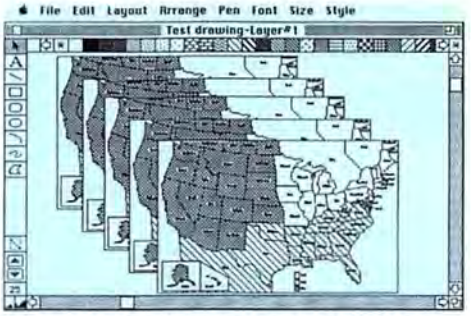
HyperAtlas ★★★
is a collection of U.S. and World maps that are networked to stacks containing economic, political, and population data. Version 1.0. Requires HyperCard and second disk drive or hard disk. $99. MicroMaps Software, P.O. Box 757, Lambertville, NJ 08530. NCP (Oct '88)

HyperDA ★★★★
lets you browse through HyperCard stacks through a DA. A true equalizer for 512K Mac owners who cannot normally access stackware. Doesn't support

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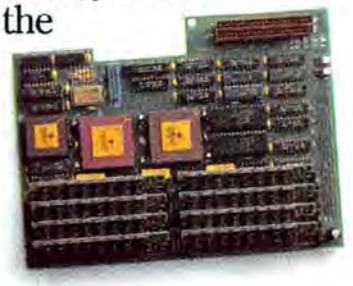
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global variables. Requires 512K or more. $69. Symmetry, 761 E. University Drive, Mesa, AZ 85203. NCP (May '88)

HyperTutor ★★★★½
is a stack that teaches HyperTalk, HyperCard's programming language. Uses an interactive Test Mac on each card to write scripts. A variety of windows makes it good for both beginners and advanced programmers. $49.95. Channelmark, 2929 Campus Drive, San Mateo, CA 94403. NCP (Apr '88)

Macintosh Bible: STAX! Edition ★★★
is a collection of Macintosh tips in a stack, based on the book by Coleman and Naiman. Version 1 reviewed. Requires 1 megabyte, second 800K drive, HyperCard. $79.95. STAX!, 8008 Shoal Creek Blvd., Austin, TX 78758. NCP (Mar '89)

Reports ★★★½
endows HyperCard stacks with the power to sort and impart information like a database. Customizing reports is difficult. Requires HyperCard. $99.95. Activision, Inc., 3885 Bohannon Drive, Menlo Park, CA 94025. NCP (Aug '88)

ScriptExpert ★★★★
helps you generate HyperTalk scripts by leading you through the correct use of the language. Select a common command, and dialog boxes prompt you for necessary components. Version 1.0. Requires HyperCard. $79.95. Hyperpress Publishing, P.O. Box 8243, Foster City, CA 94404. NCP (Oct '88)

VideoWorks II HyperCard Driver ★★★½
lets you play movies directly from a stack. One way to add color animation to HyperCard. Version 1.0. Requires 1 megabyte, VideoWorks II, and HyperCard; hard-disk drive recommended. $99.95. MacroMind, 1028 W. Wolfram, Chicago, IL 60657. NCP (Dec '88)

Organizational Tools

Acta ★★★★½
is an outline processor in DA format. It has practically all the power of a standalone program, and then some. Can save files as Acta outlines, MacWrite files, or text files. Version 2.0. $79. Symmetry Corporation, 761 E. University Drive, Mesa, AZ 85203. NCP (Oct '88)

Comment ★★★★
is an electronic version of Post-it Notes. A mini word processor lets you attach notes to a spreadsheet cell, to words in a text document, or to a window on the desktop. Version 2.0. Requires 512KE. $99.95. Deneba Software, 3305 N.W. 74th Ave., Miami, FL 33122. NCP (Dec '88)

Design ★★★★½
is a powerful organizational tool. It goes beyond mere flowcharting. Graphically depicts relationships between systems. Complex, detailed program aimed at software pros. $250. Meta Software, 150 Cambridge Park Drive, Cambridge, MA 02140. NCP (Apr '88)

FamilyCare ★★★
is a handbook to childhood diseases. The rule-based expert system gives advice based on symptoms. Ailments and diseases run the gamut from acne and appendicitis to wheezing and yeast infections. Lacks graphics. Version 1.0. Requires 512K. $99. Lundin Laboratories, 29451 Greenfield Road, Southfield, MI 48076. Mac II and MultiFinder friendly. NCP (Sept '88)

FlowMaster ★★★★★
charts your ad dollars in print, TV, billboard, and other mediums. Analyzes cost/benefit of a campaign in terms that even jaded Mad. Ave. execs will find innovative. Includes bar-chart and tabular output. Requires 512K or more. $495. Select Micro Systems, 40 Triangle Center, Yorktown Heights, NY 10598. NCP (Jan '88)

For the Record ★★★★
is a database specifically designed for legal, financial, and personal records. Allows password locking of screens containing sensitive personal data. Version 1.0 reviewed. Requires 512KE. $49.95. Nolo Press, 950 Parker St., Berkeley, CA 94710. NCP (Feb '89)

FormSet: Business Forms Edition ★★★
brings a wealth of business forms, such as expense reports and profit/loss statements, into the electronic arena. Fields are automatically calculated. Can't be customized beyond adding logo. Version 1.0. Requires 512KE and two 800K floppy drives or hard disks. $95. SoftView, 4820 Adhor Lane, Suite D, Camarillo, CA 93010. NCP (Jan '89)

GeoQuery ★★★★
puts your database on the map by accessing zip code information. Comes with maps of the U.S. Other atlases available. Version 1.0 reviewed. Requires 1 megabyte or more and second disk drive. $349. Odesta, 4084 Commercial Ave., Northbrook, IL 60062. NCP (July '88)

Guide ★★★★½
allows you to cross-reference from within a document using hypertext. You can set up words or sections of the document so that double-clicking brings up explanatory material, graphics, and other useful items. The word processing and formatting functions, however, are limited. $135. OWL International, 14218 N.E. 21st St., Bellevue, WA 98007. NCP (Apr '87)

Inspiration ★★★
has flowcharting tools that let you free-associate ideas visually, then automatically dump the flowchart into a text outline. Version 1.0. Requires 512KE. $149. Ceres Software, 9498 S.W. Barbur Blvd., Suite 103, Portland, OR 97219. NCP (Dec '88)

Instant Expert ★★★½
is an excellent way to learn the mechanics of creating an expert system. The inference engine (that ultimately finds the answer) is visible. Lacks a true Mac interface. Version 1.0. $49.95. Human Intellect Systems, 1670 S. Amphlett Blvd., Suite 326, San Mateo, CA 94402. NCP (Jan '88)

MacProject ★★★
allows a user to plan and track a project from beginning to end. Uses CPM to produce schedules with start and finish dates for each task. Can report on resource interdependencies and generate all needed printed reports. $195. Claris, 440 Clyde Ave., Mountain View, CA 94043. NCP (Mar '86)

MacSchedule ★★★★
is a simple scheduling program with substantial intelligence built into it, making the creation and maintenance of schedules nearly painless. Produces Gantt charts only (no PERT or CPM). Version 1.0 reviewed. Requires 512K or higher. $195. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301. NCP (May '89)

MacSMARTS ★★★
can create small, stand-alone expert systems. Features hypertext connections to Paint, PICT, SYLK, and text files. Still a little buggy. Version 1.03. Requires 512K or more. $149.95. Cognition Technology, 55 Wheeler St., Cambridge, MA 02138. NCP (Jan '88)

MORE II ★★★★★
is an outlining and organizational tool that is a big improvement over its predecessors, MORE and ThinkTank. It has on-screen capabilities well beyond its competitors', especially in multimonitor setup. $395. Requires Apple System 4.1 or higher, 1-megabyte Mac Plus or higher, and a hard disk. Version 1.0 reviewed. Symantec, Living Videotext Division, 10201 Torre Ave., Cupertino, CA 95014. NCP (May '89)

QuickDEX ★★★★½
keeps your phone numbers in an electronic Rolodex. The DA even plays the tone through the Mac's sound port. Version 1.4a. Requires 512KE; hard disk is recommended. $60. Casady & Greene, P.O. Box 223779, Carmel, CA 93922. NCP (Jan '89)

STELLA for Business ★★★★½
is a simulation tool used to model complex business systems. Requires that you master a discipline called "system dynamics." Requires 512K or more. Mac II version available. $350. High Performance Systems, 13 Dartmouth College Highway, Lyme, NH 03768. NCP (June '88)

SuperExpert ★★½
is an expert-system shell that induces rules from examples. Rules become unwieldy when many criteria and examples are used. Overpriced. Version 1.4 reviewed. Requires 512KE. $199.95. Softsync, 162 Madison Ave., New York, NY 10016. NCP (July '88)

WillMaker ★★★½
is a simple yet valuable run-time BASIC program for creating simple wills. Not elegant, but it does the job well. Version 3.0 reviewed. Requires 800K disk. $59.95. Nolo Press, 950 Parker St., Berkeley, CA 94710. NCP (Mar '89)

Utilities

AutoMac III ★★★½
is similar to Tempo II and Apple's MacroMaker but is generally easier to use and comes with excellent documentation and a powerful Macro Editor. Version 2.0 reviewed. Requires 512KE. $79.95. Also distributed with Microsoft products (Word 3.02 and 4.0, File 2.0). Genesis Micro Software, P.O. Box 6236, 17124 N.E. Eighth Place, Bellevue, WA 98008. NCP (Feb '89)

AutoSave DA ★★★
is insurance against system crashes. It saves your work automatically at intervals from 1 to 99 minutes. Compatible with many applications, but not recommended for use with databases. $49.95. Magic Software, 1706 Galvin Road S., Bellevue, NE 68005. NCP (Jan '88)

Capture ★★★★★
saves any portion of a Macintosh screen to the Clipboard or as a PICT file. Works in color on the Mac II. Requires 512K or more. MultiFinder friendly. $59.95. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301. NCP (June '88)

Colorizer ★★★
adds pigments to the desktop and black-and-white applications. Also colors PICT graphics. System resources include saving and printing color screens. A useful novelty that'll run its course as developers add color to apps. Requires Mac II. $49.95. Palomar Software, P.O. Box 2635, Vista, CA 92083. NCP (Jan '88)

Copy II for the Macintosh ★★★★
is a collection of powerful yet easy-to-use disk utilities. Disk copying and much more. Version 7.2 reviewed. Requires 512K. $39.95. Central Point Software, 15220 N.W. Greenbrier Parkway #200, Beaverton, OR 97006. NCP (Mar '89)

DiskExpress ★★★★★
optimizes hard-drive performance by reorganizing fragmented files. Best of its kind. Version 1.5. Requires 512K. $49.95. ALSoft, P.O. Box 927, Spring, TX 77383. NCP (Jan '89)

DiskFinder ★★½
searches disks for files as well as cataloging disks. Requires 512KE. $49.95. Williams & Macias, South 3707 Godfrey Blvd., Spokane, WA 99204. NCP (Feb '89)

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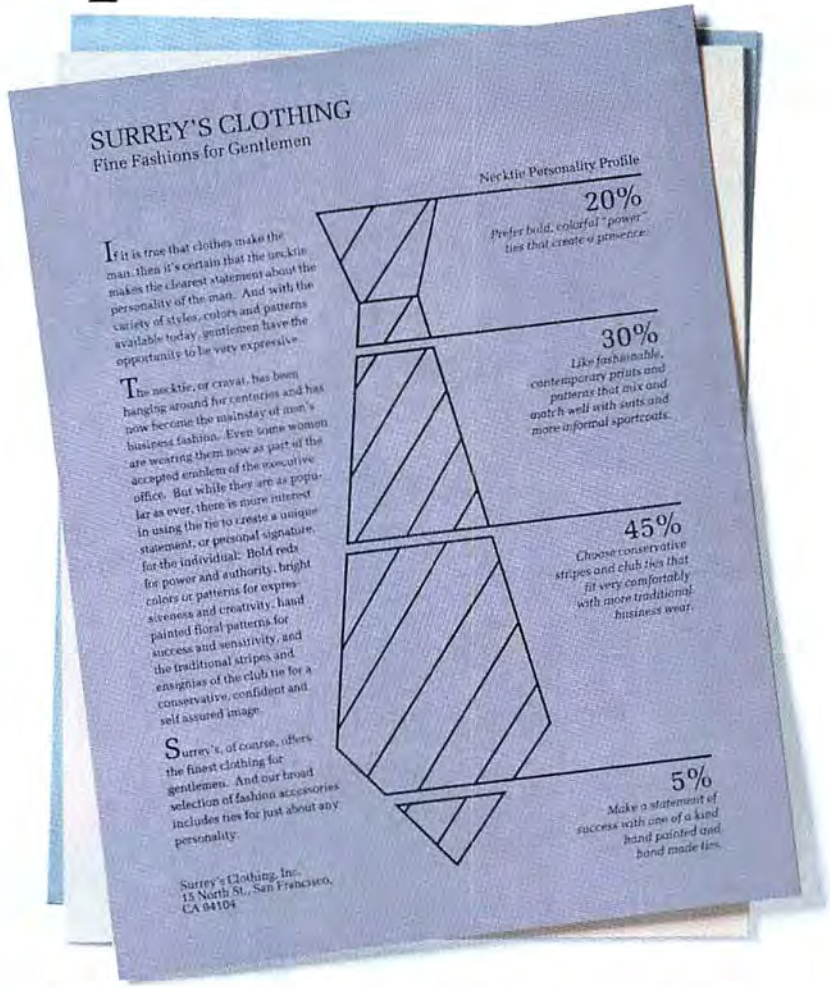
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MINIFINDERS

DiskFit ★★★★½
is a utility for backing up and restoring hard disk files. Creates a "SmartSet" of floppy disks so incremental backups only update files modified since the last backup procedure. Backs up to floppies or another hard disk. Requires 512KE or higher. $99.95. SuperMac Technology, 485 Potrero Ave., Sunnyvale, CA 94086. NCP (June '87)

DiskQuick ★★★★
is an easy-to-use cataloging program. Criteria selection option for generating subcatalogs. Requires 512K or more. $49.95. Ideaforms, P.O. Box 1540, Fairfield, IA 52556. NCP (Apr '87)

DiskTools Plus ★★★★★
is a set of eight useful DAs and applications. Earlier version was sold as Battery Pak. The DA Disk Tools II is a Finder replacement. Also included are an RPN calculator, Phone Pad, and Calendar Manager. Requires 512K or more. $49.95. Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. NCP (Mar '88)

DiskTop ★★★★½
is a DA Finder replacement of extraordinary power and ease of use. Comes with the useful LaserStatus DA and Widgets application. The extras alone are worth the price. Requires 512K or more. Upgrade from version 1.0, $7; $10 with new manual. $49.95. CE Software, 1854 Fuller Road, West Des Moines, IA 50265. NCP (Aug '87)

Dubl-Click Calculator Construction Set ★★★★½
lets users design personalized calculators with a variety of standard and special functions. Finished calculators can be saved as installable desk accessories or as clickable applications. $59. Dubl-Click Software, 18201 Gresham St., Northridge, CA 91325. NCP (Apr '86)

Eureka: The Solver ★★★
is a free-form numerical equation solver. Standard trigonometric and logarithmic functions are available, as is treatment of imaginary and complex numbers. $195. Borland International, 4585 Scotts Valley Drive, Scotts Valley, CA 95066. NCP (Mar '88)

Fastback for the Macintosh ★★★
is hard-disk backup software that is very quick, if not very efficient. Doesn't automatically exclude applications. Creates a separate catalog disk. $99.95. Fifth Generation Systems, 1322 Bell Ave., Tustin, CA 92680. NCP (Apr '88)

FEdit Plus ★★★★★
is the file and disk editor for everyone, from newest Mac owner to oldest. It can do more for your disks and files than any other application. Can recover deleted MFS files. If you own a Mac, get it. HFS compatible. $49.95. MacMaster Systems, 108 E. Fremont Ave. #37, Sunnyvale, CA 94087. NCP (Sept '86) ★'86 Eddy

Findswell ★★★★★
is an indispensable utility that installs a new button in the Open dialog box of virtually every Macintosh application. Press the button, type a search string, click on Find, and Findswell searches for any files that match. Click Open or double-click to open the correct file. Requires 512K or more. $49.95. Working Software, P.O. Box 1844, Santa Cruz, CA 95061-1844. NCP (Nov '87) ★'87 Eddy

1stAid Kit HFS ★★★★½
recovers lost or damaged files from floppy or hard disks. An excellent manual-turned-textbook actually teaches the Hierarchical File System. Requires 1 megabyte or more. Version 2.2 reviewed. $99.95. 1stAid Software, 42 Radnor Road, Boston, MA 02135. NCP (June '88)

FlashBack ★★★
is a utility to back up HFS hard disks onto floppies. A unique graphic display of the HFS directory facilitates file selection. The program can handle files larger than 800K. $59.95. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301. NCP (Nov '86)

Font/DA Juggler Plus ★★★★
gives you unlimited access to almost any number of fonts, desk accessories, and sounds. Uses hierarchical menus. $59.95. ALSoft, P.O. Box 927, Spring, TX 77383. NCP (May '88)

Glue ★★★★½
adds a print-to-disk capability to many programs. ImageSaver installs as printer driver; Viewer allows copying and printing of Glue files. Handy utility for desktop publishers. $59.95. Solutions International, P.O. Box 989, Montpelier, VT 05602. NCP (Dec '86)

Hard Disk Util ★★★★½
uses patch files to allow users to mount and run specified programs on their hard disks. The list of patches is constantly expanding. $89.95. FWB Software, 2040 Polk St., San Francisco, CA 94109. NCP

HFS Backup ★★★★½
ranks as one of the preferred hard-disk backup utilities. Back up by file/folder or last changes. Backup specifications can be saved as templates. Good graphic interface. Reliable program. $49.95. Personal Computer Peripherals Corp. (PCPC), 4710 Eisenhower Blvd., Building A, Tampa, FL 33634. NCP (Dec '86)

HFS Locater Plus ★★★★
is the essential HFS DA. It can search for a file by name or date of creation, create folders, move files from one folder to another, set a program to launch while in an application. $39.95. PBI Software, 1163 Triton Drive, Foster City, CA 94404. NCP (Sept '86)

Icon-It! ★★★★½
lets you create icons to use as an alternative to menu commands. Comes with 47 icon templates or you can create your own. Version 1.0. $79.95. Olduvai Software, 7520 Red Road, South Miami, FL 33143. NCP (Feb '88)

LabView ★★★★
is a graphical programming environment that creates "virtual instruments" to perform calculations, acquire laboratory data, and control instrumentation. Slow. Version 1.1 reviewed. $1,900. National Instruments, 12109 Technology Blvd., Austin, TX 78727-6204. NCP (July '88)

LaserServe ★★★★★
is a printer spooler for AppleTalk networks. After installation all operations are done with a DA. Works with both MacServe and TOPS. Requires 512K or more and 800K drive or hard disk. $95 per node. Infosphere, 4730 S.W. Macadam Ave., Portland, OR 97201. NCP (Feb '87)

Mac Disk Catalog II ★★★★
is a utility that quickly organizes a moderate-size disk library. Easy-to-use, with powerful reporting and label-making features. $49.95. New Canaan Micro Code, 136 Beech Road, New Canaan, CT 06840. NCP (Dec '85)

MacFlow ★★★½
is a design tool created for programmers. Traditional flowcharting symbols are linked together, and a symbol can be connected to a separate flowchart file. Now supports custom symbols. $125. Mainstay, 5211-B Derry Ave., Agoura Hills, CA 91301. NCP (Apr '87)

MacInUse ★★★★★
tracks time spent in applications and saves info as text files. Installs on any disk, works in background. MFS, HFS compatible. Extremely valuable for tax purposes, client records, etc. $79. SoftView, 4820 Adohr Lane, Camarillo, CA 93010. NCP (Jan '87) ★'86 Eddy

MacLabeler ★★★½
lets users instantly index and print labels for all the disks in a burgeoning collection. Choose border type and orientation of your label; index by folder or document. Starter set of labels is included. $49.95. Ideaform, P.O. Box 1540, Fairfield, IA 52556. NCP (Prem)

MacNosy ★★★★★
is a global disassembler. A very sophisticated user can use this program to look into the code of virtually any program. This advanced tool can take you places no other Mac program could dream of going if you have the skill to guide it. The documentation is sparse. For pros only. $170, SE and Plus; $350, Mac II. Jasik Designs, 343 Trenton Way, Menlo Park, CA 94025. NCP

MacSafe ★★★★
is a data file security program that allows you to place multiple files into a "safe," and then you can further protect them through two types of encryption (including DES). Flexible and very easy to use. Allows for installation on hard disk. $149.95. Kent Marsh Ltd., 1200 Post Oak Blvd., Houston, TX 77056. CP (Mar '87)

MacTree ★★★½
displays your files in the form of a hierarchical tree. Good idea, poor performance. Can't view tree easily. Good search function. Requires 512K or more. $69.95. Software Research Technology, 22901 Mill Creek Drive, Laguna Hills, CA 92653. NCP (Apr '88)

MacZap ★★★★
is a three-part disk and memory utility. It can be used to recover some damaged files and disks, compare disks, analyze disk structure, and make backup copies of most disks. $60. Micro Analyst, 2505 Roxmoor, Austin, TX 78723. NCP (Jan '86)

MasterJuggler ★★★★★
is Font/DA Juggler with so many features added that they can't be listed here. A world-class utility. Not as elegant as Suitcase II but has more features. Version 1.0 reviewed. Requires 512K or more. $79.95. ALSoft, P.O. Box 927, Spring, TX 77383-0927. NCP (Mar '89)

MockPackage+ ★★★★½
is a set of extremely powerful DAs. Includes a text editor, text printer (supports LaserWriter), charter, terminal, and EZmenus. HFS compatible. $35. CE Software, 1854 Fuller Road, West Des Moines, IA 50265. NCP (Mar '87)

MultiDisk ★★★★
is an excellent software disk partitioner that allows partitions to be dynamically resizable, password-protected, and even encrypted. Version 1.0 reviewed. Requires 512K or higher. $39.95. ALSoft, Inc., P.O. Box 927, Spring, TX 77383. NCP (May '89)

myDiskLabeler ★★★★
is an excellent label maker. It can read directories and use large or small icons or anything desired. Comes with 54 precut labels. $44.95; with color printing ability (on the ImageWriter II), $54.95; with PostScript font capability (on the LaserWriter), $64.95. Williams and Macias, P.O. Box 19206, Spokane, WA 99219. NCP (Aug '87)

'Ncryptor ★★★★
is a simple, safe program that lets users password-protect their files. The same program is used for encoding and decoding. This is one of the best products in its category. $39.95. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301. NCP

NightWatch ★★★★½
locks up your hard disk by using a floppy startup disk that acts as a key. Type in the correct password, and access to the hard disk is allowed. Version 1.02.

MINIFINDERS

Requires 512KE, a hard disk, and an 800K drive. Mac II and MultiFinder friendly. $149.95. Kent Marsh Ltd., P.O. Box 460289, 1200 Post Oak Blvd., Suite 210, Houston, TX 77056. NCP (Sept '88)

On Cue ★★★★½
lets you switch applications without returning to the Finder. Under MultiFinder, active applications are listed on a pop-up menu. Can also launch directly to a specific document. Version 1.0. Requires 512K. Mac II and MultiFinder friendly. $59.95. ICOM Simulations, 648 S. Wheeling Road, Wheeling, IL 60090. NCP (Sept '88)

OmniPage ★★★★
is a very good OCR program that can create editable text files out of scanned images. It works only with certain scanners and requires a lot of memory, so be sure you can meet its requirements before you buy. Version 1.0 reviewed. 68020 and 4 megabytes required. $695. Caere Corporation, 100 Cooper Court, Los Gatos, CA 95030. NCP (Mar '89)

PowerStation ★★★★★
is an extremely easy-to-use, versatile and powerful Finder substitute. Loaded with powerful features. Comes with Pyro! $59.95. Fifth Generation, 1322 Bell Ave., Tustin, CA 92680. NCP (Dec '87)

Printworks for the Mac ★★★★
is a comprehensive software-based dot-matrix printer control system. Optimizes printing from different applications and is easy to use. Requires 512K or more. $75. SoftStyle, 7192 Kalanianaole Highway, Honolulu, HI 96825. NCP (Aug '87)

Programmer's On-line Companion ★★★
puts an abridged version of *Inside Macintosh* in your system for reference. Simply read the text or transfer some or all of it directly into your normal editing window. Non-Mac–ish interface makes the program confusing, somewhat difficult to use. $34.95. Addison-Wesley, Route 128, Reading, MA 01867. NCP (July '87)

QuicKeys ★★★★
lets you make full use of your keyboard. Assign any command (menu choices, DAs, etc.) or series of text blocks and/or command to any key or key combination. Enormously powerful; necessary for Apple Extended Keyboard owners. Requires 512K or more. $99.95. CE Software, 1854 Fuller Road, West Des Moines, IA 50265. NCP (Jan '88) ★'87 Eddy

RamSnap ★★★★
is a RAM disk and disk cache in one easy-to-use package. Can store multiple configurations as files. Good product but a little pricey. $30. Dove Computer Corp., 1200 N. 23rd St., Wilmington, NC 28405. NCP (June '87)

Read-it! ★★★★
is the best consumer value in optical character recognition software. Works with any scanner that saves images as a bit-map, PICT, or TIFF file. Comes with type tables that can be customized. Version 1.1. $395; ThunderScan version, $149.95. Olduvai Software, 7520 Red Road, South Miami, FL 33143. NCP (Apr '88)

RoundUp
searches your disk for a specified text string. Slow, awkward, poor performer. Does not work with Mac II or 68020 accelerators. Version 2.0E reviewed. Requires 512K. $49.95. Virginia System Software Services, 5509 W. Bay Court, Midlothian, VA 23112. NCP (Apr '89)

Sentinel ★★★★
encrypts data files (or sets of files) using a super-secure DES or a super-fast SuperCrypt algorithm. Provides high-level security if you can keep your passwords secret. Requires 512KE. $295. SuperMac Technology, 485 Potrero Ave., Sunnyvale, CA 94086. NCP (Apr '88)

Smart Alarms ★★★★½
is the best reminder system for the Mac. Easy to use, versatile, and, well, smart. This self-running DA automatically reminds you of anything you enter into its Reminder file, giving you a wide range of useful advance warning options. $49.95. Imagine Software, 19 Bolinas Road, Fairfax, CA 94930. NCP (Oct '86)

SmartScrap and The Clipper ★★★★½
are two useful DA utilities for graphics work. SmartScrap is a major enhancement to the standard Scrapbook DA. The Clipper provides you with a transparent Clipboard window, allowing you to resize or crop a graphic to the area that it will be pasted to. $59.95. Solutions International, 30 Commerce St., Williston, VT 05495. NCP (July '87) ★'87 Eddy

SoundWave ★★★★
is a useful sound recording and editing utility. Works with waveforms; able to change sampling rates. Previously known as SoundCap. $199.95. Impulse, 6870 Shingle Creek Parkway, Minneapolis, MN 55430. NCP (Apr '88)

Stepping Out II ★★★★★
is a software alternative to a large-screen monitor. Lets you create a virtual screen (as large as memory allows) inside the Mac's 9-inch screen. Automatically scrolls to new document position as you type or draw. Version 2.0. Requires 1 megabyte. $95. Berkeley System Design, 1700 Shattuck Ave., Berkeley, CA 94709. NCP (Oct '88)

StuffIt ★★★★★
compresses files to reduce the amount of space they take up on disk. Great for transferring documents via modem. Also joins and encrypts files. Version 1.5. Requires 512KE. Shareware fee, $18. Raymond Lau, 100-04 70 Ave., Forest Hills, NY 11375-5133; also available on most electronic services. NCP (Dec '88)

Suitcase ★★★★★
is a transparent program that automatically lets you use all your fonts and DAs. Foolproof and indispensable. Comes with Pyro!, the best screen saver. Requires 512K or more. $59.95. Fifth Generation, 1322 Bell Ave., Tustin, CA 92680. NCP (Nov '87) ★'87 Eddy

SuperLaserSpool ★★★★
is a LaserWriter spooler. Very fast because it does conversion to PostScript in the background, but doesn't print a faithful rendition of PageMaker documents as a result. $149.95 single user, $395.95 for up to five users on one network. SuperMac Technology, 485 Potrero Ave., Sunnyvale, CA 94086. NCP (June '87)

Symantec Utilities for Macintosh ★★★★★
(or SUM) reduces worries about losing data. It prevents, diagnoses, and, if required, fixes many serious disk and file problems. Recovers lost files on crashed hard disks. Version 1.0. Requires 512KE. $99.95. Symantec, 10201 Torre Ave., Cupertino, CA 95014. NCP (Sept '88) ★'88 Eddy

Tempo II ★★★★½
is a powerful keyboard macro program that gives owners of extended keyboards their money's worth. Especially good for building sequential macros. Features include conditional branching and the ability to remember menu selections by name. Version 1.0. $149.95. Affinity Microsystems, Ltd., 1050 Walnut St., Suite 425, Boulder, CO 80302. NCP (Dec '88)

Top Desk ★★★★½
is a set of seven self-installing (and self-removing) DAs. Menu Key adds Command-key sequences to programs; View allows looking at and moving data among up to eight MacWrite documents; also included are BackPrint, Touch 'n' Go, Blank, Encrypt, and Launch. $59.95. Cortland Computer, P.O. Box 9916, Berkeley, CA 94709. NCP (May '86) ★'86 Eddy

TMON ★★★★★
is the debugger for the Mac. This isn't open to question. TMON is simply the best. Comes with the latest version of Darin Adler's Extended User Area. $149. ICOM Simulations, 626 Wheeling Road, Wheeling, IL 60090. NCP

Turbo Download ★★★★½
is a DA designed specifically to increase the speed of Xmodem data transfers from national databases to your Mac. Speed increases range upward from 50 percent to over 300 percent at 2,400 baud. $39.95. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301. NCP

Twelve-C Financial Desk Accessory ★★★★
brings all the power and functionality of a Hewlett-Packard 12C programmable calculator to your desktop. Can be programmed and all registers can be viewed while calculator is running. $49.95. Positive Works, 142 Cone Road, Ormond Beach, FL 32074. NCP

TypeNow ★★★★
is a DA that allows the Mac and ImageWriter to function as an electronic typewriter. Type can be placed into blanks in complex forms easily. Typing can be recorded and played back. $39.95. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301. NCP (Jan '86)

WorksPlus Command ★★★★
lets you build and define macros for all Works modules. Predefined macros provide for an even tighter integration of the program's word-processing, spreadsheet, and database modules. Requires 1 megabyte or more. $99.95. Lundeen & Associates, P.O. Box 30038, Oakland, CA 940604. NCP (May '88)

Languages

AAIS Prolog ★★★★
is a fast standard Prolog with excellent debugging and error handling. Good for serious program development. Documentation is not as good as the program. $150. Advanced AI Systems, P.O. Box 39-0360, Mountain View, CA 94039-0360. NCP (Mar '87)

Acknowledge ★★★★½
lets advanced programmers create customized applications that will accomplish many telecommunications tasks — from automatically picking up E-mail to communicating with VAXs. Version 1.0. Requires 512KE. $495. SuperMac Technology, 485 Potrero Ave., Sunnyvale, CA 94086. NCP (Jan '89) ★'88 Eddy

Allegro Common Lisp ★★★★★
is a development environment with an EMACS-style editor that implements most Common LISP editing and debugging functions. Version 1.2. Requires 1 megabyte and a hard drive. $600. Coral Software, P.O. Box 307, Cambridge, MA 02142. NCP (Nov '88) ★'88 Eddy

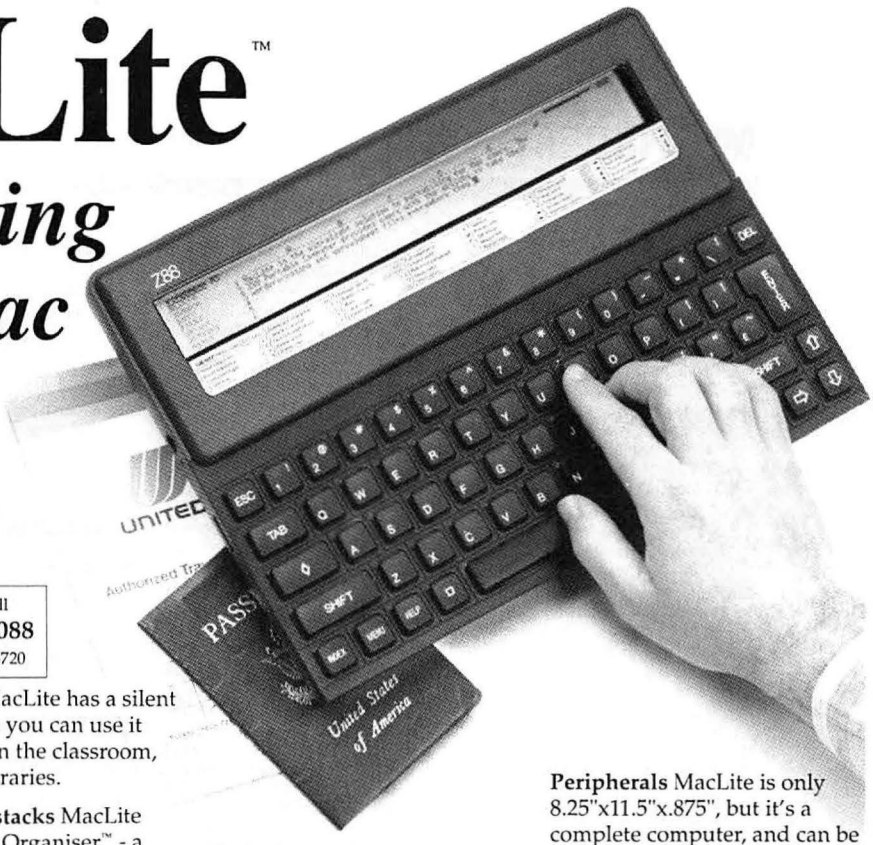
ExperCommon Lisp ★★★
is a LISP development system. Not fully Common LISP compatible, but creates good compiled code and stand-alone applications. Requires 1 megabyte or more. $995. ExperTelligence, 559 San Ysidro Road, Santa Barbara, CA 93108. NCP (Aug '87)

ExperLISP ★★★
is a useful programming language for high-level programmers. The more you use it, the more you'll figure out about it. $495. Requires 512K or more. ExperTelligence, 559 San Ysidro Road, Santa Barbara, CA 93108. CP

ExperLogo ★★★
is a version of the popular teaching language, Logo. Features three-dimensional

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You'd like to do some writing while you're on vacation in Hawaii; take your name, address and phone number file on a business trip; take a spreadsheet to a meeting down the hallway. You'd like to throw your Mac in your briefcase along with everything else.

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Keyboard MacLite has a silent keyboard, so you can use it anywhere - in the classroom, meetings, libraries.

HyperCard stacks MacLite includes HC Organiser™ - a HyperCard stack for your Mac that keeps track of names, addresses, phone numbers and things to do. Data from HC Organiser stacks can be transferred to and from MacLite.

Memory MacLite can be expanded to over 1.5Mb of memory. There's 32K built in, and three memory modules of up to 512K can be inserted under the keyboard. (A 128K memory module is included with MacLite, for a total of 160K.)

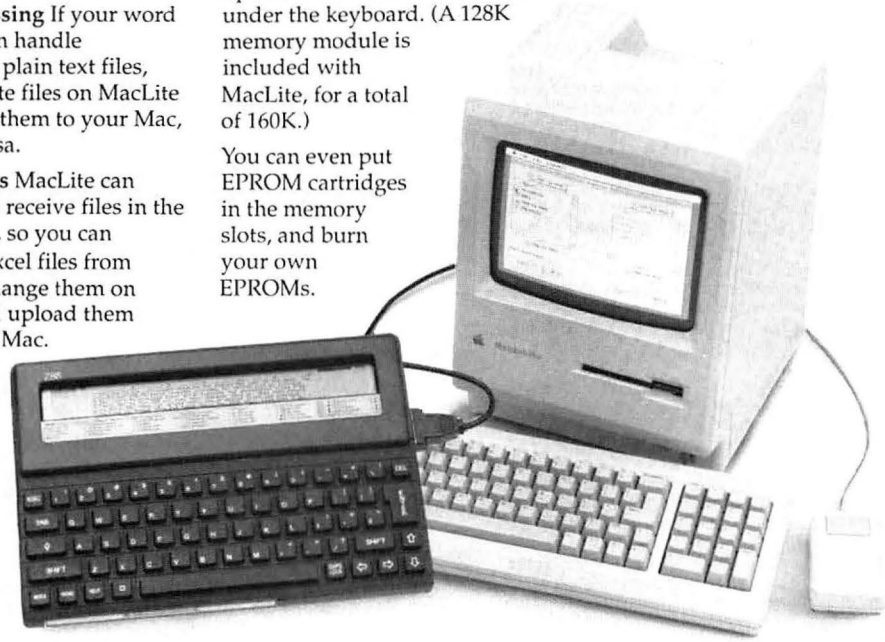
You can even put EPROM cartridges in the memory slots, and burn your own EPROMs.

Batteries MacLite runs on 4 AA disposable batteries for up to 20 hours, and your data is safe for months. You won't even lose data when you change batteries.

Display The display is a supertwist LCD with eight lines by 106 characters. There's even a page map to show you the "shape" of a complete page.

Peripherals MacLite is only 8.25"x11.5"x.875", but it's a complete computer, and can be used with a pocket modem, a serial or parallel printer.

Operating system MacLite's multi-tasking operating system allows you to have several documents open simultaneously, and to switch from one to another with just a few keystrokes. When you return to a document - even after switching off - you'll find it exactly as you left it, without booting, loading, opening, saving, closing or quitting.



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graphics using "bunnies" rather than the usual "turtles." Very speedy, smooth program. Comes with an excellent manual. $149.95. ExperTelligence, 559 San Ysidro Road, Santa Barbara, CA 93108. CP

ExperProlog II ♦♦♦
is a Prolog based on the new Prolog II standard. Has the ability to handle infinite trees and allows user-defined functions that operate conditionally. Documentation is not the best and Mac interface is nonstandard. $495. ExperTelligence, 559 San Ysidro Road, Santa Barbara, CA 93108. NCP (Mar '87)

LPA MacProlog ♦♦♦♦
is a much improved program that includes incremental and optimizing compilers, a graphics environment package, and C and Pascal submodules. Version 2.0. Requires 1 megabyte or more. $495. Programming Logic Systems, 31 Crescent Drive, Milford, CT 06460. NCP (Feb '88)

Mac C ♦♦♦♦
is a good, highly Mac-oriented implementation of this popular development language. Assembler and linker included. $425. Consulair, 140 Campo Drive, Portola Valley, CA 94025. NCP ★'85 Eddy

MacExpress ♦♦♦
is a development environment or shell. Programmers use it to save time and effort when developing stand-alone applications for the Mac. $195. ALSoft, P.O. Box 927, Spring, TX 77383. NCP (Feb '86)

MacForth Plus ♦♦♦♦
is an excellent implementation of the popular Forth programming language. New, reduced price; $199. Creative Solutions, 4701 Randolph Road, Rockville, MD 20852. NCP

Mach II ♦♦♦♦
is a multitasking implementation of Forth that allows local variables and text files. Can create stand-alone applications. Several windows can be up with different operations in each, operating concurrently. Execution is fast. $99.95. Requires 512K or more. Palo Alto Shipping, P.O. Box 7430, Menlo Park, CA 94026. NCP (Apr '86)

Macintosh 68000 Development System ♦♦♦♦
is a fairly traditional assembly-language package. The two-disk set provides an editor (Edit), an assembler, a linker, an executive, and a resource compiler. $195. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. NCP

MacScheme ♦♦♦
is a LISP dialect with "artificial intelligence" capabilities. Has a large appetite for RAM. Interpreted language with Toolbox access limited to a small part of QuickDraw. $125. Semantic Microsystems, 4470 S.W. Hall St., Beaverton, OR 97005. NCP (June '86)

MacScheme+Toolsmith ♦♦♦♦♦
is a Mac version of Scheme, a LISP dialect. Beautiful implementation, marred only by relative slowness compared to similar products. Get Toolsmith. Requires 1 megabyte or more. $395. Semantic Microsystems, 4470 S.W. Hall St., Beaverton, OR 97005. NCP (Aug '87)

Object Logo ♦♦♦♦
is an object-oriented programming language with access to the Toolbox. Good product, but can't produce stand-alone applications. Requires 512K or more. $79.95. Coral Software, P.O. Box 307, Cambridge, MA 02142. NCP (Aug '87)

Prolog/m ♦♦♦♦
is a solid Prolog following the Edinburgh standard. Has extensive debugging facilities, but you'll need a separate Toolbox disk with 58 additional predicates. Drawback: No true editing or printing facilities. $99.95. Chalcedony Software, 5580 La Jolla Blvd., La Jolla, CA 92037. NCP (Mar '87)

QUED (Quality Editor for Developers) ♦♦♦♦
is the ultimate source-code editor. Loaded with useful and well-thought-out features, it will make any programmer's life much easier. It is not a word processor, however. $65. Paragon Concepts, 4954 Sun Valley Road, Del Mar, CA 92014. NCP (Mar '86)

THINK's LightspeedC ♦♦♦♦½
features rapid turnaround time for development and testing of programs by the use of an integrated compiler, linker, and editor. Source-level debugger steps through your code line by line to examine the values of variables. Version 3.0. Requires 2 megabytes. $175. Symantec, 10201 Torre Ave., Cupertino, CA 95014. NCP (Jan '89) ★'88 Eddy

THINK's Lightspeed Pascal ♦♦♦♦♦
is a fast, powerful development system for Pascal programming. Fully integrated Mac-like environment. Requires 512K or more. $125. Symantec, 10201 Torre Ave., Cupertino, CA 95014. NCP (Feb '87)

TML Data Base Toolkit ♦♦♦♦
is an ISAM-type database that provides fast and efficient administration of large data files in applications developed with TML compiler. Supports multiple open index files. $89.95. TML Systems, 4241 Bay Meadows Road, Jacksonville, FL 32217. NCP (Dec '86)

TML (MacLanguage Series) Pascal ♦♦♦♦♦
is a good Pascal compiler, capable of producing stand-alone programs. Can use most existing Lisa Pascal programs with only slight modification. Requires 512K or more. $99.95. TML Systems, 4241 Bay Meadows Road, Jacksonville, FL 32217. NCP (June '86) ★'86 Eddy

TML Source Code Library ♦♦♦♦½
shows how to write programs that use custom definition routines, speech, serial drivers, split bars, and other topics. Provided on three 400K disks. Requires TML Pascal. $79.95. TML Systems, 4241 Bay Meadows Road, Jacksonville, FL 32217. NCP (Dec '86)

Visual Interactive Programming ♦♦♦♦
is a unique visual programming system for creating simple Macintosh applications. Programs are constructed in a flowchart-type manner. Easy access to most Toolbox routines. $149.95. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301. NCP (June '87)

ZBasic ♦♦♦♦
is a fast, interactive compiler capable of creating stand-alone applications that take advantage of Mac's unique features and abilities. Includes Edit, RMaker, and MacinTalk. Requires 512K or more. $89.95. Zedcor, 4500 E. Speedway Blvd., Tucson, AZ 85712. NCP (Dec '86)

Education

Alphabet Blocks ♦♦♦♦♦
teaches prereaders the letters and sounds of the alphabet. The digitized voice of an on-screen elf is clear and pleasant. Very intuitive. Requires 1 megabyte or more. $59.95. Bright Star Technology, 14450 N.E. 29th Place, Bellevue, WA 98007. NCP (May '88)

American Discovery ♦♦♦
is an interactive United States geography game that teaches states, capitals, and, in a roundabout manner, postal codes. Version 2.0 reviewed. Requires 512K or more. $59.95. Great Wave Software, 5353 Scotts Valley Drive, Scotts Valley, CA 95066. NCP (May '88)

Business Simulator ♦♦♦♦
is a training tool in a simulation game. Make decisions that manage the company through several stages over 25 years. Decisions become more difficult over time. Requires 1 megabyte or more, two disk drives (one must be 800K). May be run from a hard disk. $69.95. Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. NCP (Dec '87)

Course Builder ♦♦♦♦
creates stand-alone educational applications. An easy-to-learn dedicated programming language uses blocks and arrows. Graphics, animation and sound can be integrated. Version 2.0 allows mathematical calculations. Poor documentation. $395, plus $10 shipping. Tele-Robotics International, 8410 Oak Ridge Highway, Knoxville, TN 37931. NCP (Oct '87)

KidsTime ♦♦♦♦
is a package of five quality educational programs for children between the ages of 3 and 12. The programs all have adjustable difficulty levels. Some use speech, and one is a nice introduction to musical notes. $49.95. Great Wave Software, 5353 Scotts Valley Drive, Scotts Valley, CA 95066. NCP (Oct '86) ★'86 Eddy

LearnWord 3.0 ♦♦♦½
is a three-part series of cassette tape/disk modules that explain the intricacies of Word 3.0. They do the job but remind you why cutting classes was more fun. $49.95 per module. Personal Training Systems, P.O. Box 54240, San Jose, CA 95154. (Apr '88)

LXR•Test ♦♦♦♦
generates tests from a database of questions. Makes it easy to modify and scramble test questions. Flexible output. Requires Mac 512KE or higher, two 800K drives, or a hard-disk drive. $199 or $399, depending on features. Logic eXtension Resources, 9651 Business Center Drive, Rancho Cucamonga, CA 91730. NCP (May '88)

MacType ♦♦♦♦
offers structured typing instruction. Can teach both standard and Dvorak keyboards. Features include certificates for reaching certain levels. Can be used in a multistudent environment. $49.95. Palantir Software, 12777 Jones Road, Houston, TX 77070. CP

MasterType ♦♦♦
is proof that learning to type can be fun. In this arcade-style action game, words descend from four corners toward the center ship; the user must type them correctly. Features 18 skill levels, tracks errors, recommends lessons, and provides comparison scores. $49.95. Mindscape, P.O. Box 1167, Northbrook, IL 60065. CP

Mavis Beacon Teaches Typing! ♦♦♦♦
has more features than a Selectric. Lots of diagnostics concerning typos. Incomplete documentation. Version 1.1. Requires 1 megabyte. $49.95. Software Toolworks, 1 Toolworks Plaza, 13557 Ventura Blvd., Sherman Oaks, CA 91423. CP (Nov '88)

On Becoming a Desktop Publisher ♦♦♦♦
is a video training tape based largely on the syndicated television program, "The Computer Show." Good primer on the fundamentals of DTP products. Will eventually become dated. Requires Beta or VHS VCR. $49.95. Ocean Communications, 1641 N. First St., Suite 160, San Jose, CA 95112. (Sept '88)

Reader Rabbit ♦♦♦♦♦
teaches 4-to-8-year-olds how to read in four elegant games that play and build off of each other. Requires 512KE or higher and an 800K drive. Mac II and MultiFinder hostile. Version 2.0 reviewed. $59.95. The Learning Company, 6493 Kaiser Drive, Fremont, CA 94555. CP (June '88)

Sensei Physics ♦♦♦♦½
is a capable, intelligent, well-designed study aid. Covers Vectors to Thermodynamics to The Nature of Light. Animated experiments let you try out con-

The easiest way to learn Macintosh software is to play it by ear

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cepts. Requires 512K or more. $99.95. Broderbund Software, 17 Paul Drive, San Rafael, CA 94903-2101. CP (Jan '88)

Type! ★★★★½
is a typing tutorial that is both practical and flashy. It allows users to interrupt and move easily between functions; however, use of the Return key or space bar are assumed but never explained. Version 1.0. Requires 512K. $29.95. Broderbund, 17 Paul Drive, San Rafael, CA 94903-2101. NCP (Nov '88)

Typing Instructor Encore ★★★★
recognizes that it's being used on a word processor. While it is easy to control, there are some strange bugs in the program. Requires 512K. $49.95. INDIVIDUAL Software, 125 Shoreway Road, Suite 3000, San Carlos, CA 94070-2704. NCP (Nov '88)

Typing Tutor IV ★★★
consistently tests your use of all keys, including seldom-used ones. It's hard to maintain user's attention span, as the testing material is unimaginative. Requires 512K. $49.95. Simon & Schuster, One Gulf and Western Plaza, New York, NY 10023. NCP (Nov '88)

Entertainment

The Ancient Art of War ★★★★½
gives users a chance to refight some famous campaigns on both strategic and tactical levels. Campaigns can also be designed from scratch. Very playable, addicting game. Requires 512K or more. $44.95. Broderbund, 17 Paul Drive, San Rafael, CA 94903-2101. CP (Apr '86)

Apache Strike ★★
would have been an excellent arcade game in the late '70s. Now, it's passé. Navigate a helicopter to destroy ever-increasing numbers of enemy aircraft and tanks. Mac II hostile. Requires 512K or more. $49.95. Silicon Beach Software, P.O. Box 261430, San Diego, CA 92126. NCP (July '88)

Balance of Power ★★★★★
is the world's first computer peace game. This simulation allows players to become either the President of the United States or General Secretary of the Soviet Union. Extraordinary artificial intelligence routines and general play make this a classic. $49.95. Mindscape, P.O. Box 1167, Northbrook, IL 60065. CP (Prem)

Battle Stations ★★★★
is a deceptively simple game based on the pen-and-paper game of Battleship. Requires strategy on several levels. Makes excellent use of Mac sound and graphics. Fun, casual game, especially when the Mac is one of the players. Requires 512K or more. $30. Timeline, P.O. Box 60, Ypsilanti, MI 48197. NCP (June '87)

Beyond Dark Castle ★★★½
brings back Prince Duncan in an encore performance to run, jump, and beat his way to victory. But really, just more of the same. Requires 512KE. $49.95, Silicon Beach Software, P.O. Box 261430, San Diego, CA 92126. NCP (Aug '88)

Beyond Zork ★★★★½
is yet another installmen: in the famous Zork series of text adventures. Find the fabled Coconut of Quendor to restore failing magic in this expert-level game. On-screen mapping and the Mac's window environment are utilized. $49.95. Infocom, 125 Cambridge Park Drive, Cambridge, MA 02140. NCP (Apr '88)

The Chessmaster 2000 ★★★★★
is a masterful chess program that will appeal to both novice and master. You can view the board from a 2-D or 3-D perspective and turn the board for a better look. Play is smooth and easy, and the program responds by voice. You may get tired of hearing "Gotcha," though. $39.95. The Software Toolworks, 13557 Ventura Blvd., Sherman Oaks, CA 91423. CP (July '87)

Chuck Yeager's Advanced Flight Trainer ★★
doesn't quite have the right stuff to hold interest for long. Simplistic controls. Lacks features found in versions for other computers. Version 1.0. Requires 512KE and two 800K disk drives. $49.95. Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. NCP (Nov '88)

Crystal Quest ★★★★★
combines all the good elements of nearly every video game ever made. Move a piece around to gobble up points and crystals. Shoot the nasties and get through the goal before they get you. Excellent sound effects. In color on the Mac II. Requires 512K. $49.95. Casady and Greene, P.O. Box 223779, Carmel, CA 93922. NCP (Apr '88) ★'88 Eddy

Dark Castle ★★★★★
is an outstanding achievement in action games, integrating RealSound with superb animation and graphics. You'll need better-than-average hand/eye coordination, but it's well worth the effort. Requires 512K or more. $39.95. Silicon Beach Software, P.O. Box 261430, San Diego, CA 92126. NCP (Apr '87) ★'87 Eddy

Deja Vu: A Nightmare Comes True ★★★★★
is a graphic adventure that breaks new ground. Innovative use of the Mac interface in a truly playable and exciting game. A great introduction to graphic adventure games. $49.95. Mindscape, P.O. Box 1167, Northbrook, IL 60065. CP (Jan '86) ★'85 Eddy

Dinner at Eight ★★★★
is a useful recipe-filing system that includes a collection of recipes from a nationwide sampling of restaurants. Users enter number of diners and program scales recipes. $49.95. Rubicon, 2111 Dickson Drive, Austin, TX 78704. NCP (Jan '86)

Down Hill Racer ★★★★
is an action game with three skier personalities, four courses, and four skill levels. There's something here for every player, no matter how bad or good. Full digitized sound (very nice!). $49.95. Miles Computing, 7741 Alabama Ave., Canoga Park, CA 91304. CP (Sept '87)

Falcon ★★★★½
simulates an F-16 fighter jet with gut-tightening, sweat-making realism. Go against MiGs and dodge SAMs scenarios. Requires 1 megabyte or more. $49.95. Spectrum HoloByte, 2061 Challenger Drive, Alameda, CA 94501. NCP (May '88)

Ferrari Grand Prix ★★★★
is an exciting race-car simulation game. Mastering it takes quite a bit of time and effort. Startup course and four other courses are built into the program. You can also design your own courses and backgrounds. Requires 512K or more. $59.95. Bullseye Software, P.O. Drawer 7900, Incline Village, NV 89450. CP (July '87)

Fool's Errand ★★★★★
is an outstanding collection of 80 puzzles woven around a mythical theme of an evil priestess and the search for wisdom. Requires 512K or more. $49.95. Miles Computing, 7741 Alabama Ave., Canoga Park, CA 91304. NCP (July '88)

Gato ★★★★½
puts players in command of an American submarine in World War II. This superb simulation game uses all of the Mac's graphic capabilities to really make you feel that "you are there." $49.95. Spectrum HoloByte, 2061 Challenger Drive, Alameda, CA 94501. CP (Nov '85)

GO ★★★½
is the Chinese equivalent of chess. Players plonk markers on a grid to gain territory and outwit an opponent or the computer. Requires 512K or more. Mac II hostile; MultiFinder friendly. Version 1.0 reviewed. $49.95. Infinity Software, 1144 65th St., Studio C, Emeryville, CA 94608. NCP (June '88)

Handwriting Analyst ★★★★½
produces a personality profile based on answers to questions about one's handwriting. It's simple and the results will amaze and astound. $49.95. Ciasa, 2017 Cedar St., Berkeley, CA 94709. NCP (Apr '88)

Hollywood Hijinx ★★★★
substitutes a modern Hollywood estate for the famous Underground Empire but otherwise represents a return to Zork game play and feel. There's even a maze to navigate. Simplistic but good. $39.95. Infocom, 125 Cambridge Park Drive, Cambridge, MA 02140. NCP (June '87)

Klondike ★★★★★
is a version of solitaire that uses video-game–like scoring to create a superb, totally addictive game. Simple to play, nearly impossible to stop playing. Version 3.3. Shareware: $10. Unison Software, 415 Clyde Ave., Mountain View, CA 94043. NCP (Dec '87)

Leather Goddesses of Phobos ★★★★★
is another in the long line of witty and entertaining Infocom text adventures. This one lets you choose your sex and comes with a 3-D comic and a scratch 'n' sniff card. It has three levels of play: tame, suggestive, and lewd. $19.95. Infocom, 125 Cambridge Park Drive, Cambridge, MA 02140. NCP (Feb '87)

Lunar Rescue ★★★★½
puts you in the role of a benevolent trader ready to save a moon colony from invasion. Blast the enemy while you travel from town to town trading goods for the supplies you need for your mission. Version 1.0. Requires 512KE. $59.95. Practical Computer Applications, 1305 Jefferson Highway, Champlin, MN 55316. CP (Jan '89)

MacGolf ★★★★½
is a dynamic simulation of real golf. Players have a choice of courses and difficulty levels. Superb playability makes this a must for all golfers and gamers. Requires 512K or more. $59.95. Practical Computer Applications, 1305 Jefferson Highway, Champlin, MN 55316. CP (May '86)

Mac Pro Football ★★★★
is a terrific sports simulation that gives you the chance to pit any combination of 38 Super Bowl teams against each other and direct team play. It comes with excellent, detailed (and necessary) documentation. Play selection can get a bit Byzantine. $49.95. Avalon Hill, 4517 Harford Road, Baltimore, MD 21214. CP (Mar '87)

MacRacquetball ★★★½
uses digitized videos and sounds of professional players for a realistic simulation. Has lots of control settings and can be played with someone else over a modem or between hard-wired Macs. Turn off hard disks before playing. $59.95. Practical Computer Applications, 1305 Jefferson Highway, Champlin, MN 55316. CP (Oct '87)

MSFL: Pro League Football ★★★★½
is a professional football league simulation that encourages people to play people, not the machine. Fast with lots of stats. Quirky MS-BASIC behavior. Spotty manual. No LaserWriter support. Requires 1 megabyte or more. $49. MicroSports, P.O. Box 15799, Chattanooga, TN 37415. NCP (Apr '88)

NewGammon ★★★★
is animated backgammon that will challenge even good players. Features include variable skill levels and strategies and options to play the Mac or watch

MINIFINDERS

the Mac play itself. An arcade-like high-speed mode is included. $39.95. Newsoft, P.O. Box 3046, Newport Beach, CA 92663. CP

Ogre ♦♦♦♦
is a strategy tank game played on a hexagon grid. The ogre is an intelligent cybertank out to smash your command post. Customize your defense. Exceptionally good Mac interface. Has two-player option. $30. Origin Systems, 340 Harvey Road, Manchester, NH 03103. CP (Nov '87)

Patton vs. Rommel ♦♦♦♦
is a traditional-style strategic war game. It covers events in Normandy in 1944. While complex, it's well designed and very playable. $39.95. Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. CP (Apr '87)

Puppy Love ♦♦♦♦½
is a combined game and teaching tool. As you teach your puppy tricks and routines, you learn the basics of programming logic. Great fun for all ages. Does not run from a hard disk. $29.95. Addison-Wesley, Route 128, Reading, MA 01867. CP (Mar '87)

Quarterstaff ♦♦♦♦
is a fantasy adventure game of the typical "good versus evil" variety. Ability to use characters in other adventures gives this game a lot of potential for development. Version 1.2. Requires 1 megabyte or more. $49.95. Simulated Environment Systems, 800 S. Pacific Coast Highway, Redondo Beach, CA 90277. NCP (Mar '88)

Seven Cities of Gold ♦♦♦♦
is an educational program masquerading as an adventure game and is practically unique in being equally good in both respects. You are to land (not the easiest part) in the New World and attempt to placate the natives, seed a few missions, and collect gold. Nice work if you can get it. $39.95. Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. CP (June '87)

Shadowgate ♦♦♦♦½
is an icon-based graphic adventure. You, as the seed of prophecy, must save the world from the evil warlock. Far surpasses all others with great animated graphics, sound, and adventure. $49.95. Mindscape, P.O. Box 1167, Northbrook, IL 60065. CP (Dec '87)

Shanghai ♦♦♦♦♦
challenges players to clear a board of all 144 tiles by matching pairs of mahjongg tiles and removing them. Terrific strategic options plus the ability to randomly generate new game boards keep this one fresh. $44.95. Activision, 3885 Bohannon Drive, Menlo Park, CA 94025. CP (Nov '86) ★'86 Eddy

Snake-Bar ♦♦♦♦
lets you guide a snake (or train or semi) through a maze, picking up objects that feed and make your snake grow. Options include changing languages, editing the maze, and playing an X-rated game. Shareware: $15. Georges Malmound, 37 Bis rue des Abbesses, Montmartre, 75018 Paris, France. NCP (Dec '87)

Solitaire Royale ♦♦♦♦
is a collection of eight solitaire card games. The Tour mode cycles through each game. Tournament deals the same hand for several players. $34.95. Spectrum Holobyte, 2061 Challenger Drive, Alameda CA 94501. CP (May '88)

Space Quest ♦♦♦♦
is a 3-D animated adventure in which you play a janitor in a dicey situation. All you have to do is get off your ship before it explodes and save the Earnon System. Runs on any Mac. $49.95. Sierra On-Line, P.O. Box 485, Coarsegold, CA 93614. CP (Sept '87)

Star Fleet I: The War Begins! ♦♦♦♦
is a space opera of the Star Trek variety. Rise through the ranks from ensign to admiral in this serialized adventure. Requires 512K or more. $55. Interstel, P.O. Box 57825, Webster, TX 77598. NCP (May '88)

Strategic Conquest Plus ♦♦♦♦½
challenges you to discover an unexplored world and conquer it by manufacturing and deploying armies, ships, and planes. A two-disk game that doesn't support an external drive. Requires 512K or more. $59.95. PBI Software, 1111 Triton Drive, Foster City, CA 94404. CP (Feb '88)

Trust & Betrayal: The Legacy of Siboot ♦♦♦♦½
requires negotiating with six artificial personalities in a struggle for power — not surprising considering that it comes from the maker of Balance of Power. Uses hieroglyphics to communicate in a fantasy world. Requires 512K or more. Mindscape, P.O. Box 1167, Northbrook, IL 60065. CP (Mar '88)

Uninvited ♦♦♦♦♦
is an icon-based adventure game set in an extremely haunted mansion. Graphic interface makes it easy to play. Animation and sound add to the thrill. $49.95. Mindscape, P.O. Box 1167, Northbrook, IL 60065. CP (Sept '86) ★'86 Eddy

Winter Games ♦♦♦♦
lets up to eight players compete against each other in Olympic events including figure skating, bob sledding, biathlon, and ski-jumping. Excellent animation, good graphics, good theme music. $39.95. Epyx, P.O. Box 8020, Redwood City, CA 94063. CP (Mar '86)

Music

Alchemy ♦♦♦♦♦
loads and edits digitally sampled sounds from most commercial samplers. Works with 512K, but it eats up memory quickly. Requires MIDI or RS-422 interface, and sampler. $495. Blank Software, 1477 Folsom St., San Francisco, CA 94103. CP (Oct '88) ★'88 Eddy

Apple MIDI Interface ♦♦♦
is a simple Musical Instrument Digital Interface with a 1-megahertz clock rate. Has only one MIDI input and one output. Works with all Macs; adapter required for 128K and 512K. $99. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. (June '88)

ConcertWare+ ♦♦♦♦
is an enhanced version of ConcertWare. Has different instruments and can use any four of a set of eight at any point in a piece. Supports Adobe Sonata music font. $69.95. Great Wave Software, 5353 Scotts Valley Drive, Scotts Valley, CA 95066. NCP (Dec '87) ★'85 Eddy

ConcertWare+MIDI ♦♦♦♦
is a composition and transcription program that can record multiple notes from a MIDI keyboard. Easy to use if you read music. Handles eight tracks of eight voices each. Requires 512K. Version 4.0. $149.95. Great Wave Software, 5353 Scotts Valley Drive, Scotts Valley, CA 95066. NCP (Dec '87)

Cue: The Film Music System ♦♦♦♦½
is a powerful and versatile assistant for scoring films. Automates spotting and logging cue points and searching for matching tempos. Also performs many minor jobs, such as generating a performing rights cue sheet. Version 2.0 reviewed. Requires 512KE. $595. Opcode Systems, 1024 Hamilton Court, Menlo Park, CA 94025. CP (Feb '89)

Deluxe Music Construction Set ♦♦♦♦
lets you enter up to 48 voices on eight staves and play the music through the Mac's internal speaker and/or via MIDI. Requires 512K or more. Mac II and MultiFinder hostile. Version 2.0 reviewed. $99.95. Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. CP (June '88)

Graphic Notes Music Publisher ♦♦♦♦
is a very good page-layout program for music notation, with MIDI support. Comes with special musical notation keypad. Version 2.0 reviewed. Requires 1 megabyte and second disk drive. $595 (including Presto keypad). Graphic Notes, Inc., 200 Seventh Ave., Santa Cruz, CA 95062. NCP (Apr '89)

Jam Factory ♦♦♦
is a program for performing complex manipulations on MIDI data in real time. Unique, entertaining, and very powerful, but requires lots of patience and practice. Requires 512K or more, MIDI interface, and MIDI synthesizer. $189. Intelligent Computer Music Systems, P.O. Box 8748, Albany, NY 12208. CP (Oct '87)

Jam Session ♦♦♦♦
is a music program for those who think MIDI refers to the length of skirts. Without any skill, you can "jam" with rock, jazz, rap, or country tunes. A sort of "Sing Along with Mitch" for the computer set. Requires 512K or more. $49.95. Broderbund, 17 Paul Drive, San Rafael, CA 94903-2101. CP (July '88)

Listen ♦♦♦♦
is an educational tool for ear training. It has both a piano keyboard and a guitar fretboard for the student to input notes, and it offers a wide range of exercises. $99. Resonate, P.O. Box 996, Menlo Park, CA 94026. (Jan '87)

M ♦♦♦
is a music composition and creation program that works with MIDI data in real time. Unique, entertaining, and powerful, but requires lots of practice and patience. Requires 512K or more, MIDI interface, and MIDI synthesizer. $219. Intelligent Computer Music Systems, P.O. Box 8748, Albany, NY 12208. CP (Oct '87)

Master Tracks Pro ♦♦♦♦½
is a full-featured second-generation MIDI sequencer that adheres to the Mac interface very well. It's the first program to have graphic controller editing. No longer needs patch chasing for professional use. Version 3.3 reviewed. Requires 512KE or higher. $395. Passport Designs, 625 Miramontes St. #103, Half Moon Bay, CA 94019. CP (Dec '87)

MIDIBasic ♦♦♦♦
is a simple but highly useful routine for writing MIDI software. Good stuff. Sketchy documentation. Works with both Microsoft and ZBasic. Requires 512K or more plus Basic. $49.95. Altech Systems, 831 Kings Highway, Shreveport, LA 71119. NCP (Aug '87)

Music Mouse ♦♦♦♦♦
is a music program in a genre all its own. Called an "intelligent instrument," Music Mouse gives you instant musical feedback as you move the mouse and type on the keyboard, which controls tempo, vibrato, volume, etc. $59.95. OpCode Systems, 444 Ramona St., Palo Alto, CA 94301. NCP (May '87)

Performer ♦♦♦♦
is the definitive MIDI sequencer and is priced accordingly. Includes looping, SMPTE synching, 32 simultaneous Ins and Outs, unlimited overdubbing, and compatibility with Professional Composer for transcription. Version 2.2. Requires MIDI interface and 512K or more. $395. Mark of the Unicorn, 222 Third St., Cambridge, MA 02142. CP (Jan '88)

Practica Musica ♦♦♦♦
uses an interactive game and practice approach to teach music theory and ear training. Excellent training tool for the serious music student, it is also fun for anyone who wants to develop a trained ear for intervals, chords, and melo-

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- System Saver Mac (platinum) ... 58
- Tilt/Swivel 18
- Turbo Mouse ADB **NEW** 105
- Xtra Long ADB Keyboard Cable .. 23

KRAFT
- 3 Button Quick Stick 29

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- Grappler C/Mac/GS 70
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Click Art Letters, Vol. 2	26
Click Art Personal Graphics	27
Click Art Publications	27
Cricket Paint	108
Crystal Paint	38
The Curator	66
"Draw It Again Sam"	70
GraphicWorks	79
Image Studio	262
Images With Impact	48
Japanese Clip Art	53
Laser Paint B/W	261
Laser Paint Color II	314
Mac 3-D	135
Pict-O-Graph	95
Picture Base	46
PixelPaint	189
Post Art	33
PosterMaker Plus	33
Print Shop	32
Printworks	40
Super 3-D	175
SuperPaint	71
Videoworks 2	143
WetPaint Clip Art 1-2	38
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World-Class Fonts! 1-2	38
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3-D Graphics	35

LANGUAGES

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UTILITIES

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Sentinel	139
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Stepping Out II	49
Suitcase II	42
Super Laser Spool	71
SuperSpool	47
Tempo II	71

UTILITIES & HYPERCARD STACKWARE

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Falcon	29
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Shadowgate	28

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Fluent Laser Fonts	43
Fontshare	138
Orchestra of Fonts, Vol. 4	23

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dies. Requires 512K or more. $125. ARS Nova Software, P.O. Box 40629, Santa Barbara, CA 93140. NCP (Nov '87) ★'87 Eddy

Professional Composer ♦♦♦½
produces performance-quality sheet music using Adobe's Sonata font. Scores can be created from scratch or imported from Performer (and can be exported to Performer for MIDI playback). Requires 512K or more. $495. Mark of the Unicorn, 222 Third St., Cambridge, MA 02142. CP (Jan '88)

Softsynth ♦♦♦♦
creates sounds for additive synthesis samplers. Downloading from Mac to sampler is time consuming. Requires 512K, sampler, MIDI interface. $295. Digidesign, 1360 Willow Road, Suite 101, Menlo Park, CA 94025. CP (Oct '88)

Sound Designer ♦♦♦♦
set the standard for editing samples on lower-cost samplers, but it still lacks real-time high-fidelity playback. Requires 512K, sampler, MIDI interface. Emax, E II, 2000/2002, DSS-1, S900, $495; all others, $395. Digidesign, 1360 Willow Road, Suite 101, Menlo Park, CA 94025. CP (Oct '88)

Studio Session ♦♦♦♦½
consists of two programs, an Editor and a Player, that produce music with six voices of digitized sound. Excellent program and manual make this a good buy. $89.95. Bogas Productions, P.O. Box 6699, Terra Linda, CA 94903-0699. NCP (Aug '87) ★'86 Eddy

Turbosynth ♦♦♦♦♦
creates sounds for a digital sampler using modular-synthesis techniques. Good harmonic spectral inverter. Lacks an easy method of multisampling. Requires 1 megabyte, sampler, MIDI interface. $349. Digi-design, 1360 Willow Road, Suite 101, Menlo Park, CA 94025. CP (Oct '88)

UpBeat ♦♦♦½
turns the Macintosh into a front panel for a highly complex and versatile drum machine. Input patterns with mouse, MIDI keyboard, or drum machine. Requires 512K. $150. Intelligent Music, P.O. Box 8748, Albany, NY 12208. CP (May '88)

Hardware & Accessories

AppleCD SC ♦♦♦♦
reads CD-ROM optical discs that contain up to 656 megabytes of data. Also plays audio compact discs. Reads High Sierra format, an industry standard for CD-ROM. Requires SCSI port. $1,295. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. (Dec '88)

Apple Scanner ♦♦♦½
is not the state of the art, but is adequate for scanner neophytes. The 4-bit (16 gray levels) scanner comes with AppleScan software and HyperScan, written by Bill Atkinson. Requires System 6.0; hard disk for full-page work; SCSI connection cables. $1,799. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. NCP (Feb '89)

AST TurboScan ♦♦♦♦
is a 300-dpi scanner with sophisticated graphics software. Scans at resolutions from 72 to 300 dpi. Super-Scan software offers halftone, line art, and mixed modes. "Virtual memory processing" lets you scan images too large to fit in RAM. $1,899. Requires 512K or more. SuperScan software included. AST Research, 2121 Alton Ave., Irvine, CA 92714. NCP (Nov '87)

Classic Professional Graphics Display ♦♦♦½
is a low-cost color monitor for the Mac II. Good value, but has an IBM-look about it. Green tint is annoying. Requires Apple video card. $549. Classic Components, 1490 Artesia Blvd., Gardena, CA 90247 (June '88)

DATAPAK ♦♦♦♦
is a 45-megabyte removable Winchester hard disk. Great for backing up your main hard disk or transporting large amounts of data between office and home. Requires SCSI connector and System 4.1/5.5 or later. Drive, $1,799.95; cartridges, $149.95 each or tri-pack for $419.95. MASS MICRO Systems, Inc., 550 Del Rey Ave., Sunnyvale, CA 94086-3258. (Jan '89)

DaynaFile ♦♦♦♦
hooks up to a SCSI drive to read MS-DOS disks in the Mac environment. Use Mac applications to manipulate data created with an IBM PC. Comes in both 5.25-inch and 3.5-inch formats. $595 for single floppy. Dayna Communications, 50 S. Main St., Fifth Floor, Salt Lake City, UT 84144. (Jan '88) ★'87 Eddy

DEST PC Scan 2000 ♦♦♦♦½
is an 8-bit scanner that saves images in up to 256 levels of gray. Can be configured for IBM PCs. Requires 1 megabyte. Scanner, $1,495; Publish Pac software, $595; OCR text processor card, $995. DEST Corporation, 1201 Cadillac Court, Milpitas, CA 95035. NCP (Dec '88)

FAXsIf ♦♦♦
is an early entrant in the fax modem race. Adequate, but slower than most fax machines, and using it as a normal modem requires changing plugs. Requires 1 megabyte of memory, and a hard disk is strongly recommended. $695. STF Technologies, P.O. Box 247, Higginsville, MO 64037. NCP (Feb '89)

Felix ♦♦♦♦
is an optical-tracking graphics tablet that replaces a mouse. Precision mode gives pixel-by-pixel control. Doesn't collect dirt like a mouse does. The 6-inch-square device is designed primarily for right-handed people. Works with Mac Plus. $149. Altra, 1200 Skyline Drive, Laramine, WY 82070. (Sept '88)

Grappler LQ ♦♦♦♦
hooks Macs up to parallel laser and 24-pin letter-quality printers. A cable, driver software, and special fonts combine to make dozens of once-unfriendly printers now compatible with the Mac. Requires 1 megabyte and a parallel printer. $149. Orange Micro, 1400 N. Lakeview Ave., Anaheim, CA 92807. (Nov '88)

Hewlett-Packard ColorPro Graphics Plotter ♦♦♦
is an eight-pen desktop plotter that requires third-party software to drive it. Fonts are limited to an optional Graphics Enhancement Cartridge that requires some BASIC programming. $1,295. Hewlett-Packard, 16399 W. Bernardo Drive, San Diego, CA 92127. (Feb '88)

HyperDialer ♦♦♦½
provides an interface between a phone and your Mac so you can dial a number using one of the Rolodex-type programs, like SideKick, Focal Point, or QuickDEX. Hooks up between the Mac's sound port and a telephone handset. Requires 128K. MultiFinder friendly. $39.95. DataDesk International, 7651 Haskell Ave., Van Nuys, CA 91406. (Sept '88)

ImageMaker ♦♦♦♦
shoots 35mm color slides directly from the Mac. Supports most presentation software. Uses patterns to represent colors. Not fully compatible with the Mac II. Requires 512K or more. $4,995. MacDriver software, $149. Presentation Technologies, 743 N. Pastoria Ave., Sunnyvale, CA 94086. (Feb '88)

ImageWriter LQ ♦♦½
outputs letter-quality text and graphics at 216 dpi. To do so, it reduces 72-dpi screen fonts to a third of their actual size. Takes a lot of memory. Printer Driver version 2.0. Requires 1 megabyte and large font sizes. $1,400. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. (Jan '89)

IS/ONE tablet ♦♦♦½
with **Penworks** software lets you use a corded or cordless pen or mouse and a high-res tablet for precise graphics input. Minor bugs with some applications and DAs. Keystroke macros can be launched from the tablet. Minimal documentation. Requires 1 megabyte or more. $595 to $1,145. Kurta, 4610 S. 35th St., Phoenix, AZ 85040. (Jan '88)

LaserWriter IINT ♦♦♦
is Apple's mid-priced PostScript laser printer. It's faster than the LaserWriter Plus, with blacker blacks. Gray scale is less even than that of Plus. Requires 512K or more. $4,599. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. (May '88)

LaserWriter IINTX ♦♦♦♦½
is Apple's top-of-the-line PostScript laser printer. 68020 chip makes it very speedy; expandable to 12 megabytes; SCSI hard disk can be attached for fonts. Requires 512K or more. $6,599. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. (May '88)

LaserWriter IISC ♦♦♦
is Apple's low-end QuickDraw laser printer. Can be upgraded to IINT or IINTX; reasonably fast. Requires 1 megabyte or more. $2,799. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. (May '88)

Mac II Workstation ♦♦♦♦
is the best, most versatile computer workstation around. This freestanding or wall-mountable heavy steel unit includes a high shelf for your Mac II and a moveable, damped arm for your monitor. The unit comes in a variety of configurations. $540. Ergotron, 3450 Yankee Drive, Suite 100, Eagan, MN 55121. (Mar '89)

Mac-101 ♦♦♦♦
is a keyboard alternative that has a good feel to it. Has a keypad, 15 function keys, and more. The 101-Keys DA lets you define macros. Also comes in an ADB version for the SE and II. Requires 512K or more. $169.95. DataDesk International, 7650 Haskell Ave., Van Nuys, CA 91406. Software NCP (Apr '88)

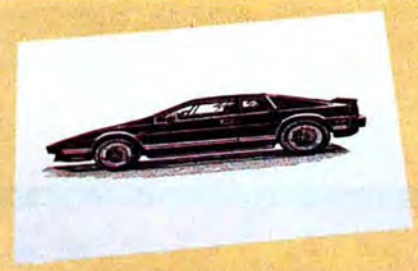
Mac-105 Keyboard ♦♦♦½
is a good alternative to Apple's Extended Keyboard, with a larger Return key, higher and more sculpted key tops, and a lower overall weight. Requires Mac SE or Mac II. $179; with QuicKeys, $199. Cutting Edge, P.O. Box 1259, Evanston, WY 82930. (Feb '89)

MacADIOS II ♦♦♦♦
is a hardware and software interface for laboratory instruments. Standard configuration samples up to 142 kilohertz. Documentation is sketchy. $1,290 for Macintosh II–ready data-acquisition card; $600 for MacADIOS II software interface. GW Instruments, 264 Msgr. O'Brien Highway, Cambridge, MA 02141. (July '88)

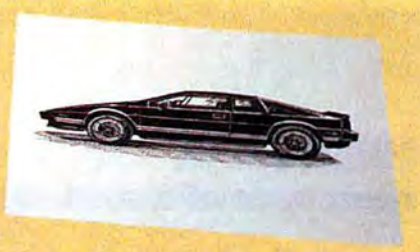
MacBottom 45 SCSI and Internal Modem ♦♦♦♦½
has a modem that fits into the top half of the 45-megabyte SCSI hard-drive case. Comes with HFS Backup and Eureka. $1,795. Personal Computer Peripherals Corp. (PCPC), 4710 Eisenhower Blvd., Building A, Tampa, FL 33634. (Oct '87)

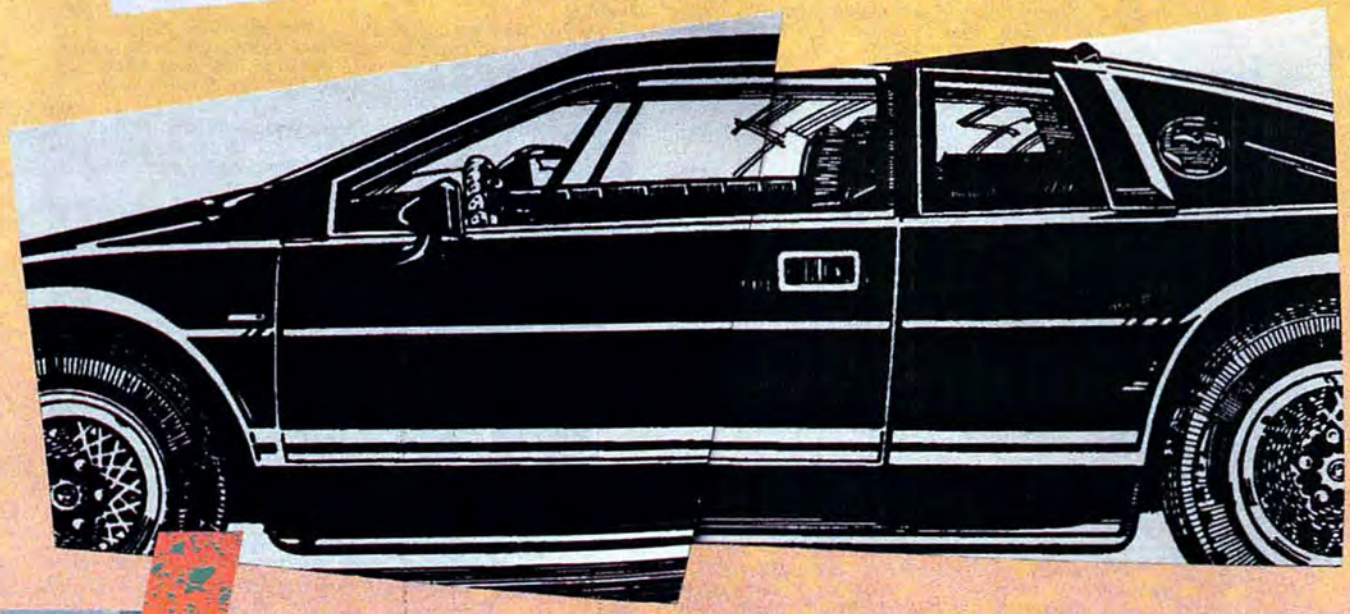
MacBottom HD-21 ♦♦♦♦♦
is a very low (about 2 inches high), external 20-megabyte hard drive. Fits under the Mac. Very quiet, very reliable. Good utility software, including HFS Backup. Requires SCSI port, 512K or more, new ROM. $1,195. Personal Computer Peripherals Corp. (PCPC), 4710 Eisenhower Blvd., Building A, Tampa, FL 33634. (Feb '87) ★'86 Eddy

MacBottom HD-70 Hard Disk ♦♦♦♦½
is an excellent drive that comes with some very good software, including HFS



These unretouched print samples show the superior print quality of QMS-PS 810 over printers using first-generation print engines.





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MINIFINDERS

Backup. Requires SCSI port. $1,995; 1,200-baud Hayes-compatible modem, $200 extra. Personal Computer Peripherals Corp. (PCPC), 4710 Eisenhower Blvd., Building A, Tampa, FL 33634. NCP (Apr '89)

Mac Crate 60MB Hard Disk ★★★★
puts a Seagate drive in a platinum casing. At $14 per megabyte, it's a good consumer value. Also comes in 20-, 40-, and 80-megabyte models. Requires SCSI port. $839. Crate Technology, 6850 Vineland Ave., Building M, North Hollywood, CA 91605. (Nov '88)

Macintizer ★★★★
is a graphics tablet and absolute positioning device that replaces the mouse. Various scales are possible. $599. GTCO Corp., 7125 Riverwood Drive, Columbia, MD 21046.

MacLarger ★★★
is a 12-inch external monitor for 512K machines on up to the SE. Displays the same number of pixels as an internal monitor, only one-third larger. Bigger and brighter, but less crisp than the Mac's own screen. $449. Power R, 1606 Dexter Ave. N., Seattle, WA 98109. (Apr '88)

MacPacq ★★★
transforms the Macintosh into a digital oscilloscope, waveform generator, and chart recorder. PacqManager is software expandable by means of external routines in Turbo Pascal and other languages. Version 1.03 reviewed. $995. Biopac Systems, 42 Aero Camino, Goleta, CA 93117. NCP (July '88)

MacRecorder ★★★★½
is an easy-to-use sound digitizer. Includes software to turn sounds into HyperCard buttons, mix sounds, add special effects, and convert sound formats. Stereo recording possible on a Mac II. Requires 512K or more. $199. Farallon Computing, 2150 Kittredge St., Berkeley, CA 94704. NCP (June '88)

MacSnap Plus 2 ★★★★
is a 2-megabyte memory upgrade for the Mac Plus. The board has 256 kilobit chips. User installable. Not compatible with existing big screens or internal hard disks and can't be expanded further. $729. Dove Computer, 1200 N. 23rd St., Wilmington, NC 28405. (June '87)

MacTable ★★★★½
is an elegant Danish worktable that holds a Mac and printer with room to spare. The 30-inch deep by 60-inch wide table is made of particleboard and must be assembled. Cabinet is optional. Table, $289; cabinet, $139. ScanCo-Furn, P.O. Box 3217, Redmond, WA 98073-3217. (Mar '88)

MacTablet ★★★★
is a stylus-driven graphics tablet. Users can easily sketch or trace art using this absolute-positioning device. Has a working area the size of the Mac screen. Allows concurrent use of the mouse. $495. Summagraphics Corp., 777 State St. Extension, Fairfield, CT 06430. (Jan '86)

MacTilt/MacTilt SE ★★★★
is a Mac (and external drive) holder that allows a full range of swiveling and tilting. Very strong, this well-made unit is also easy to use. $99.95. Ergotron, P.O. Box 17013, Minneapolis, MN 55418.

Magic Digitizer ★★★★
is a hardware digitizer that works with video cameras. With LaserMagic software you can generate 300 dpi images (in PostScript). Requires 512K or more. Digitizer with Magic software, $399.95; LaserMagic software, $49.95. New Image Technology, 10300 Greenbelt Road, Seabrook, MD 20706. NCP (May '87)

Microtek MSF-300C ★★★½
is a 300-dpi flatbed scanner. Really fast when used with optional MS-SCSI/C adapter. Comes with Versa-Scan Plus software (NCP) to scan and manipulate image. Saves images in a number of formats including TIFF and MacPaint. $1,895. Microtek Lab, 16901 S. Western Ave., Gardena, CA 90247. (Dec '87)

Migent Pocket Modem ★★★½
is a 300/1,200-baud portable modem about the size of a 3-x-5-inch index card. Comes bundled with MacTerm 2.0, Borland's telecommunications DA. Manual is confusing, and technical support is minimal. $259. Migent, 865 Tahoe Blvd., Incline Village, NV 89450-6062. (Nov '87)

NetModem ★★★★
is a 1200-baud modem that can be accessed by all users on an AppleTalk network. The modem's display lights and the dial tone are simulated on-screen. Requires 512K or more. $599. Shiva, Suite 1200, 222 Third St., Cambridge, MA 02142-9919. (Feb '88)

One Plus One ★★★★½
is a user-installable memory upgrade for a Mac Plus. Adds 1 megabyte of RAM to the 1 megabyte already there. Simple one-evening project. Includes MacBreeze, an excellent small fan. Requires Mac Plus. $375. Levco, 6160 Lusk Blvd., San Diego, CA 92121. (Aug '87)

Personal LaserPrinter ★★★★
is a non-PostScript laser printer at a great price. Clumsy workarounds required in some applications. Printing can be slow. Requires 1 megabyte or more. $1,999. Fonts Plus, $299. General Computer, 580 Winter St., Waltham, MA 02154. (Apr '88)

Personal Writer PW15 S ★★★★
is a tablet-based handwriting-recognition system that also allows graphics and macros. Number of misread characters is too high for general word processing. Requires 1 megabyte or more. $895. Personal Writer, 1801 Avenue of the Stars, Los Angeles, CA 90067. Software NCP (Mar '88)

PhoneNET ★★★★★
is an AppleTalk-compatible network. Network can be up to 3,000 feet in length. In-place, unused phone cabling can be used for network and can be combined with AppleTalk on the same network. $59.95 per node. Farallon Computing, 2150 Kittredge St., Berkeley, CA 94704. (Dec '86) ★'87 Eddy

ProPoint ★★★
replaces the mouse with an ADB trackball. Works better on the SE than it does on the Mac II. Lefties will find the button positions uncomfortable. Requires SE or Mac II. $139.95. Abaton, 48431 Milmount Drive, Fremont, CA 94538. (Oct '88)

QMS Colorscript 100 ★★★★
is the first color PostScript printer that uses a four-color thermal wax transfer technology. Works on AppleTalk. Excellent typographic capability. Currently supports only a handful of applications. Requires 1 megabyte. $21,995. QMS, 1 Magnum Pass, Mobile, AL 36618 (Oct '88)

QMS-PS 810 ★★★½
is an eight-page-per-minute, 300-dpi PostScript laser printer that competes with the LaserWriter IINT. 2 megabytes of RAM is standard; upgradable to 3 megabytes. Emulates HP LaserJet, 7475 (HPGL), and Diablo 630. $5,495. Laser Connection, 7852 Schillinger Park W., Mobile, AL 36608 (July '88)

QuickShare ★★★
adds a SCSI port to an IBM PC for easy connectivity with a Mac. Can use an IBM's hard disk to run Mac applications. Requires SCSI port. Mac II and MultiFinder friendly. Version 1.24 reviewed. $465. Compatible Systems, P.O. Drawer 17220, Boulder, CO 80308. (June '88)

Radius Accelerator 25 ★★★★★
can make your Mac SE run 50 percent faster than a Mac II. The add-in accelerator card has a Motorola 68020 CPU that runs at 25 megahertz, and an optional 25-megahertz 68881 math coprocessor. $1,695; $2,195 with optional 25-megahertz 68891. Radius, 1710 Fortune Drive, San Jose, CA 95131. (Oct '88)

SpeedCard ★★★★½
is an accelerator board for the Macintosh SE that more than doubles the speed of most applications. The board uses the 68000 chip found in the SE and an optional floating-point 68881 chip for number crunching. Requires Macintosh SE. $399; $699 with coprocessor. SuperMac Technology, 485 Potrero Ave., Sunnyvale, CA 94086. (Nov '88)

SuperRam 2 ★★★½
and **SuperRam 4** are 2- and 4-megabyte RAM upgrades. Should be dealer installed but can be (carefully) user installed. SuperRam 2 includes RAM adapter module, 1-megabyte memory module, modified power cable, jumper, and fan. SuperRam 4 adds power-supply booster and two 1-megabyte memory modules. Not compatible with most big screens. $499. SuperMac Technology, 485 Potrero Ave., Sunnyvale, CA 94086. (Oct '87)

Tektronix 4693D Color Printer ★★★★
is a 300-dpi bit-mapped color printer. Colors look smooth and rich. Uses bit-mapped screen fonts; most type has noticeable jaggies. Requires Mac II with color monitor. Recommended 8-megabyte configuration, $11,490. Tektronix, P.O. Box 500, Beaverton, OR 97077. (Oct '88)

ThunderScan ★★★★
replaces the ribbon cartridge in an ImageWriter, which is required to use it. Laser scans art that can be run through the ImageWriter, producing high-quality digitized images. The images can be manipulated as they are created or afterward. $249. Thunderware, 21 Orinda Way, Orinda, CA 94563. ★'85 Eddy

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Turbo Mouse ADB ★★★★★
makes an excellent mouse replacement, even if you're not a trackball fan. If you're seeking absolute control, you can buy the optional cdev that enables you to specify custom tracking and double-click speeds. $169.95; cdev $15 direct order only. Kensington Microware Ltd., 251 Park Ave. S., New York, NY 10010. NCP (Feb '89)

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V-series Smartmodem 9600 ★★★★½
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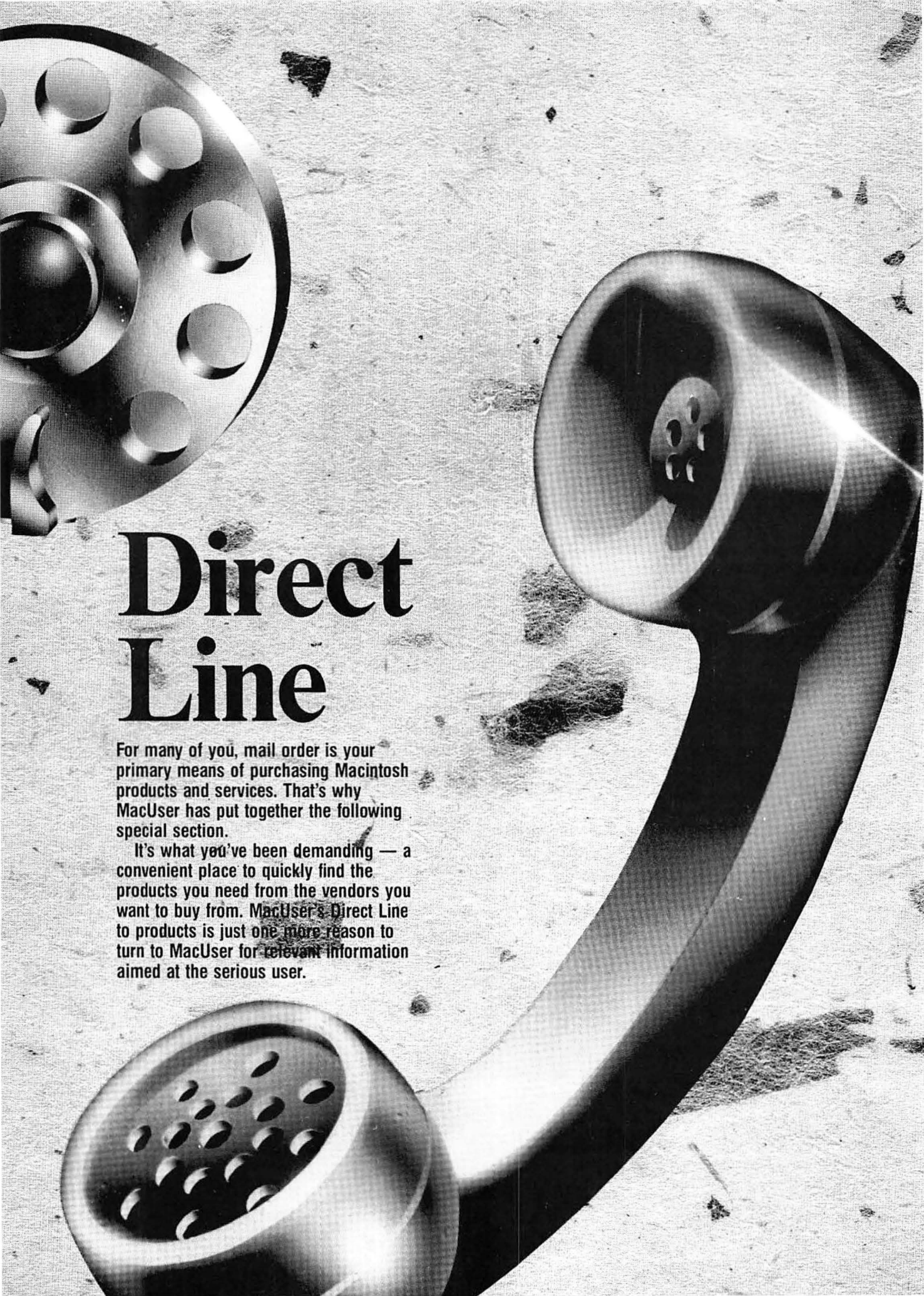
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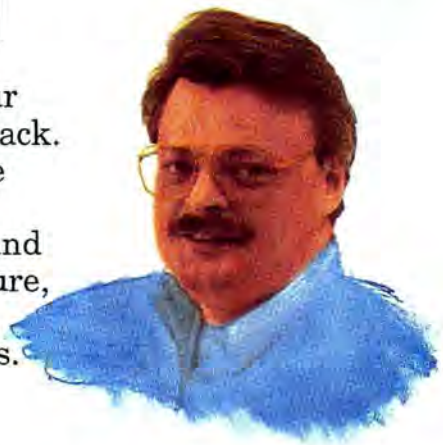
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- Disk Express 33
- Font/DA Juggler Plus 40

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- Fileguard 145

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- Simply Accounting 199

BERKELEY SYSTEMS
- Stepping Out II 49

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- Drawing Table 81
- DTP Advisor 49
- Print Shop 37

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- Market Master R/A 237

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CENTRAL POINT
- Copy II Mac 19
- PC Tools Deluxe / Mac 38

CENTRON SOFTWARE
- Casino Games 24
- Casino Master 48

CE SOFTWARE
- QuicKeys 50
- Calendar Maker 26
- Disktop 26
- Quickmail 153

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- FileMaker II 235
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- Compuserve Navigator 40

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- Mac Link Plus 125

DBFAST
- dBFast Mac 115

DENEBA
- Canvas 2.0 150
- Comment 2.0 51
- Coach Professional 99
- Coach Professional Network 263

DMA
- MacTerm 73

DESIGN SOFTWARE
- MacTree+ Includes DS Backup ... 45

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- Wet Paint 39
- World Class Fonts 39

ELECTRONIC ARTS
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- Thunder II 52
- Disk Tools Plus 33

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- Dark Castle 26
- Silicon Press 42
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SOFTVIEW, INC.
- Macintax 63

SOFTWARE VENTURES
- Microphone II 219

SOLUTIONS INTERNATIONAL
- SmartScrap & The Clipper 48
- SuperGlue 46
- The Curator 72

SUPERMAC SOFTWARE
- SuperSpool 5.0 52
- SuperLaserSpool 2.0 79
- Multi-User SuperLaserSpool 195
- Diskfit 52
- Network Diskfit 195
- Sentinel 149

SYMANTEC
- Mac SQZ 46
- Symantec Utilities 57
- More II 219

SYMMETRY CORPORATION
- Acta 2.0 39
- HyperDA 38
- Picture Base 53

TRAVELING SOFTWARE
- Lap Link Mac 82

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- Write Now 2.0 109

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- TOPS for Mac 116
- Tops for DOS 116
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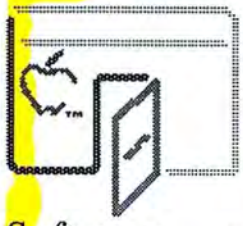
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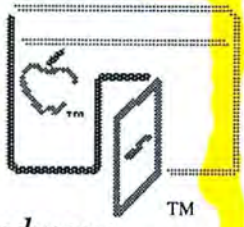


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MacUser MARKETPLACE

HARDWARE 283-286

ADD-ON-BOARDS 283
BAR CODE 283
CABLES 283
COMPUTER SYSTEMS 283
DATA ACQUISITION 283
DISK DRIVES 283
DISKETTES 284
ENGINEERING 284
GENERAL 284
INSURANCE 284
MEMORY UPGRADES 284-286
NETWORKING 286
PERIPHERALS 286
PRINTERS 286
SECURITY 286

SOFTWARE 286-293

ACCOUNTING 286
BAR CODE 286
BUSINESS 287
DESKTOP PUBLISHING 288
EDUCATIONAL 288
EMULATION 288
ENGINEERING 288
ENTERTAINMENT/GAMES 288
FINANCIAL 289
FONTS 289
GRAPHICS 289-290
HEALTH 290
LANGUAGE TOOLS 290
MAIL ORDER 290
MUSIC/MIDI 290
NETWORKING 290
PUBLIC DOMAIN 290-291
RELIGION 291
SCIENTIFIC 291
SHAREWARE 291
STACKWARE 292
STATISTICS 292
TAXES 292
WORD PROCESSING 292-293

MISCELLANEOUS 293-294

ACCESSORIES 293
BUSINESS OPPORTUNITIES 293
DATA CONVERSION SERVICES 293-294
DESKTOP PUBLISHING SERVICES 294
INSURANCE 294
MAILING LISTS 294
NOVELTIES 294
SUPPLIES 294

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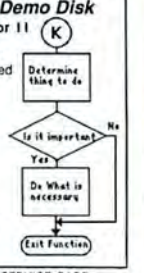
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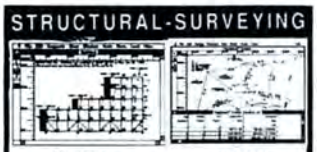
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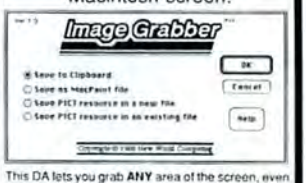


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AD INDEX

RS#	ADVERTISER	PAGE
136	Abacus	212
NA	Acius	76
91	Adaptec	231
NA	Adobe Systems, Inc	106
11	Advanced Gravis Technology	220
4	Advanced Matrix Technology	251
7	AEC Management Systems	32
20	Aldus	24-25
61	Allan Bonadio	218
56	Alsoft	110
71	Alsoft	111
125	Ashton-Tate	60-61
162	AutoDesk	96-97
146	Avatar Corporation	227
180	BDT Products	108
15	Bedford Software Corp.	236
100	Braemar	122
21	Caere	84
6	Cambridge North America	261
175	Casady & Greene, Inc	58
116	CDA Computer Sales	213
171	Centron	106
NA	Claris	190
NA	Claris	66-67
NA	Compugraphic	147-149
85	Compumart	295
119	Compuserve	203
98	Computer Friends, Inc	123
36	Computer Friends, Inc	248
40	Crate Technology	196
169	Daystar Digital	22
80	Deneba Software	5
17	Digital Vision	180
120	Diskette Connection	276
126	DPI	238
166	Dr. Mac	277
109	Dubl-Click	241
18	E-Machines	188-189
131	Ehman Engineering, Inc	36
151	Everex Systems	63
NA	Farallon Computing	224
200	First Aid Software	212
24	Fox Software	210
154	GCC Technologies	8
NA	General Electric	162
168	Hard Drives International	233
23	Hewlett Packard	42-43
97	HJC Software, Inc	107
5	I/O Design	50
198	Informix Software	214-215
164	Innovative Data Design	174
70	Insight Development	120
88	Insignia	38
NA	Intuit	79
31	Irwin Magnetic Systems, Inc	255
59	James River	258
45	Jasmine Technologies	34
42	Jasmine Technologies	100-101
58	Jasmine Technologies	168-169
44	Jasmine Technologies	88-89
49	Jasmine Technologies	C6
167	Kennect Technology	235
145	Kensington	163
144	Kensington	300
25	Kent Marsh Ltd.	243
93	Kinetics	112-113
177	Kurta	178
191	Laser Connection	269
106	Layered	48-49
76	Legend Peripheral Products	222
156	LogiTech	247
NA	MacConnection	12-19
NA	MacLand	273
28	MacProducts USA	186
165	MacStore, Inc	278
13	MacWarehouse	52-57
2	Mainstay	65
183	Mass Micro	59
182	Mass Micro	C5
189	Mathsoft	187
114	Maxell	150
115	Merrit Computer Products	172
81	Micron Technology, Inc	194
143	MicroNet Technology, Inc	139
NA	Microsoft	118-119
NA	Microsoft	C2-4,1
135	Microtech International	125
134	Microtech International	181
89	Miro Data Systems	134
82	Mirror Technologies	28-29
83	Mirror Technologies	28-29
84	Mirror Technologies	28-29
57	Multi Solutions	200
NA	Mac Zone	140-143
34	National Computer Concepts	295
86	Olduvai	205
90	Open Mac Enterprises	299
78	Optimal Technology Corp	40
NA	Oracle	21
16	Orange Micro, Inc	87
65	Orchid Technology	173
111	Paracomp Software	232
107	Paragon	86
46	Peripheral Land, Inc	219
47	Peripheral Land, Inc	221
60	Personal Training Systems	263
30	Pinnacle Micro	83
62	Programs Plus, Inc	70-75
8	Prometheus Products	116
22	Provue	78
133	Qualstar	37
178	Qume	130-131
179	Qume	130-131
142	Radius	6-7
27	Rasterops	145
NA	Round Lake Publishing Co	26
150	Safeware	278
NA	Seagate	253
9	Shamrock	276
174	Sharp	304
101	Sigma Designs	39
149	Sigma Designs	41
172	Silicon Beach	124
32	Software Excitement	279
152	Software That Fits	274-275
63	Software Ventures	80
176	Sony	90
39	Spectrum Holobyte	177
41	Storage Dimensions	271
55	Sunrise Technologies	135
NA	Supermac Technology	156-157,198
140	Survivor Software	223
92	Symantec Corporation	11
158	Symantec Corporation	27
170	Symantec Corporation	44
157	Symantec Corporation	46
43	Symmetry Corporation	82
147	Synergy Software	26
29	T/Maker Company	69
73	T/Maker Company	302
52	Telemart	266-267
129	TENpoint-O	182
195	Thunderware	10
NA	Tops	23
48	Tri-Data Systems, Inc	229
127	US Microlabs	209
103	Versacad Corporation	216
68	Vertical Solutions	299
173	Walker Company, The	37
153	Western Digital	206-207
118	White Pine Software	180

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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150
151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250
251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300
301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350
351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400
401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450
451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500

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- ☐ a) Mac Plus
- ☐ b) Mac SE
- ☐ c) Mac II
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- ☐ e) Other

2. For how many micro computers do you buy products?

- ☐ f) 1-4
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- ☐ h) 50+

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- ☐ i) Administrative/General Management
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☐ v) Communications	

5. Are you involved in the purchasing of microcomputer equipment at your company?

- ☐ 5) Yes
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51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150
151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250
251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300
301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350
351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400
401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450
451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500

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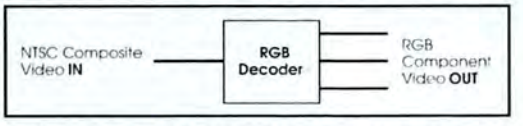
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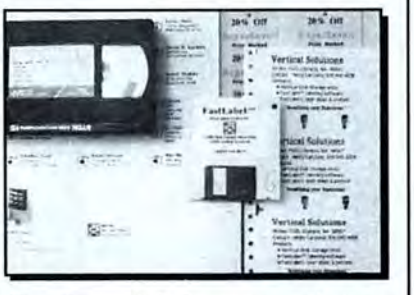
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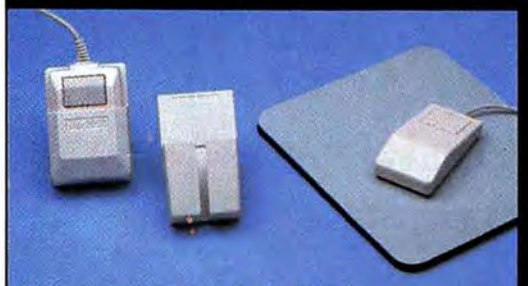
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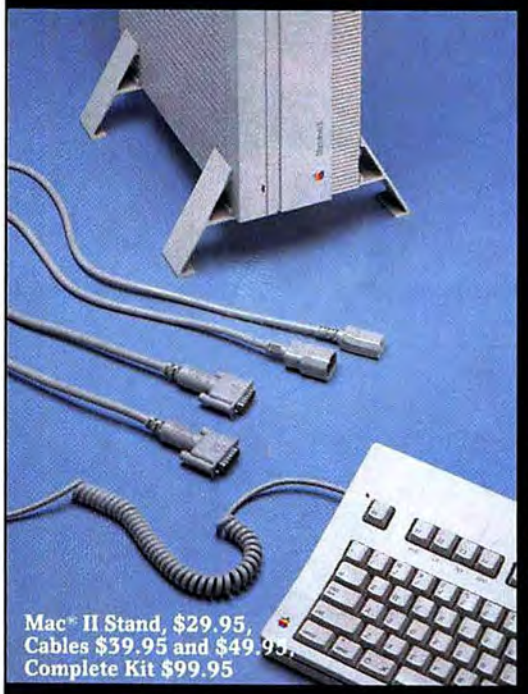
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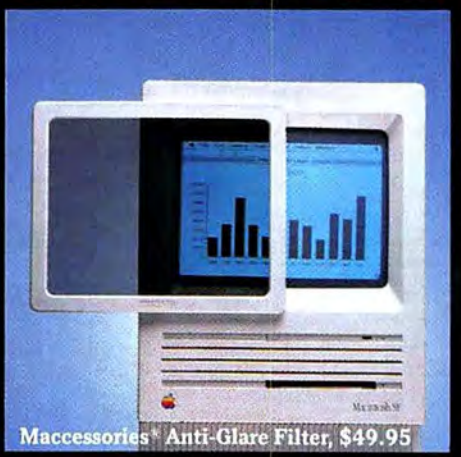
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SCRaPBOOK

EDITED BY KRISTI COALE

MAC ON THE STREET

It's become a Mac on the Street tradition, every year at about this time, to take time out from our oh-so-busy schedules to pay homage to those Macintosh products and ads that have brightened our lives this year by adhering to the credo, "It's hype, hope, and hoopla that make the world go round." We honor these paragons of the community with the prestigious Shreddy Award, bestowed on those things we'd most love to run through the paper shredder.



BEST NEW SPREADSHEET SHREDDY

Wingz Tote Bag

The **Best New Spreadsheet Shreddy** was really no contest — the Wingz tote bag was the runaway winner. We hear version 2.0 of the tote is due out any day — possibly just in time to coincide with version 1.0 of the software.

The next Shreddy goes — we know, you see it coming — to NeXT. What other company could refute charges of offering a vapor product by pointing out that version 0.8 shipped right on time, only six months after the product introduction?



BEST PACKAGED GOODS

Finale

Our Shreddy for **Best Packaged Goods** goes to Coda's Finale. Open up this $1,000 music notation package, and you'll think you've stepped into a new car. What with a video, three manuals, gold-leaf disk labels (with extra preprinted labels for your backup copies, no less), a laminated handy reference card, and textured packaging, about the only plush extra missing is Corinthian leather trim and an endorsement from Ricardo Montalban. (It may also be the first software to come with optional GMAC financing.)

"HUH?" SHREDDY

Wingz

AND

TENpointO

A number of product names tie for the **"Huh?" Shreddy.** Is it pronounced "Wingz" or "Wing-zee"? Does one alternately shout and whisper when discussing TENpointO? What is the proper glottal position to assume when asking your software dealer for a copy of Aask? What's the real story about SmartScrap's behind-the-scenes battles with The Clipper? Inspiring minds want to know.

BIG CHILL SHREDDY

Focal Point II

Speaking of TENpointO, it also receives the special **Big Chill Shreddy** for its Focal Point II ads that feature a man wearing a briefcase and little else. How the company got John Dvorak to pose for it we'll never know.



"EXCUSE ME, YOUR PINK SLIP IS SHOWING" SHREDDY

Apple Computer

Finally, the **"Excuse Me, Your Pink Slip Is Showing" Shreddy** goes to Apple Computer for its continuing efforts to add the verb *reorg* to the English language. Apple, using the patented Guess Who's Using Your Office Today technique, has honed the art of the reorg down to a science, reducing some employees to nothing more than a disembodied voice-mail message. (No wonder they thought Finder was an appropriate metaphor for office activity.)

Our good friend Anna Weighwego of Singalonwydd, Mich., seems to have too much time on her hands and has begun collecting Mac-related palindromes — phrases that read the same forward or backward — and offers the following samples. First, for the jubilant new Mac owner: "Emote! Mac came to me!" And for Jean-Louis Gassée, if asked if he took his Mac laptop with him on his Mediterranean cruise: "Remote Mac came to mer." If you have any submissions for the Weighwego collection, send them in, c/o Mac on the Street, *MacUser,* 950 Tower Lane, 18th floor, Foster City, CA 94404 — and "O, demo, help pay Apple home, do!"

— *Jon Zilber*

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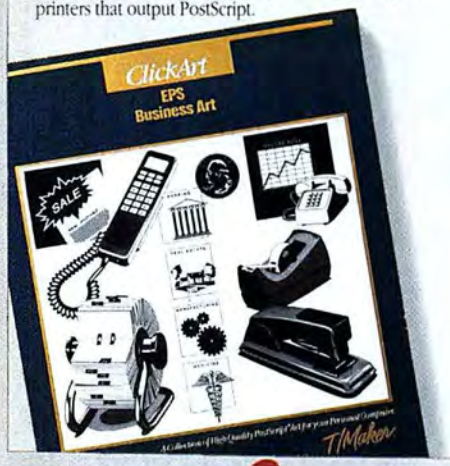
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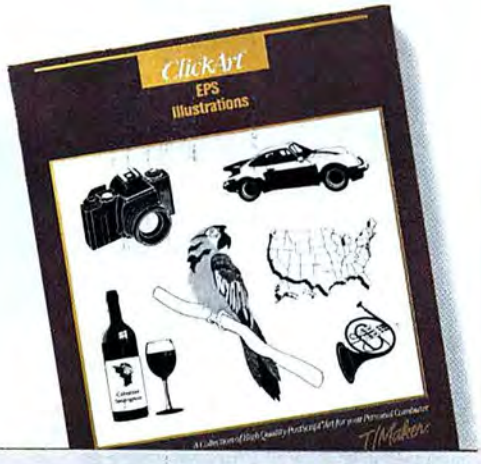
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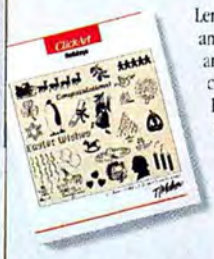
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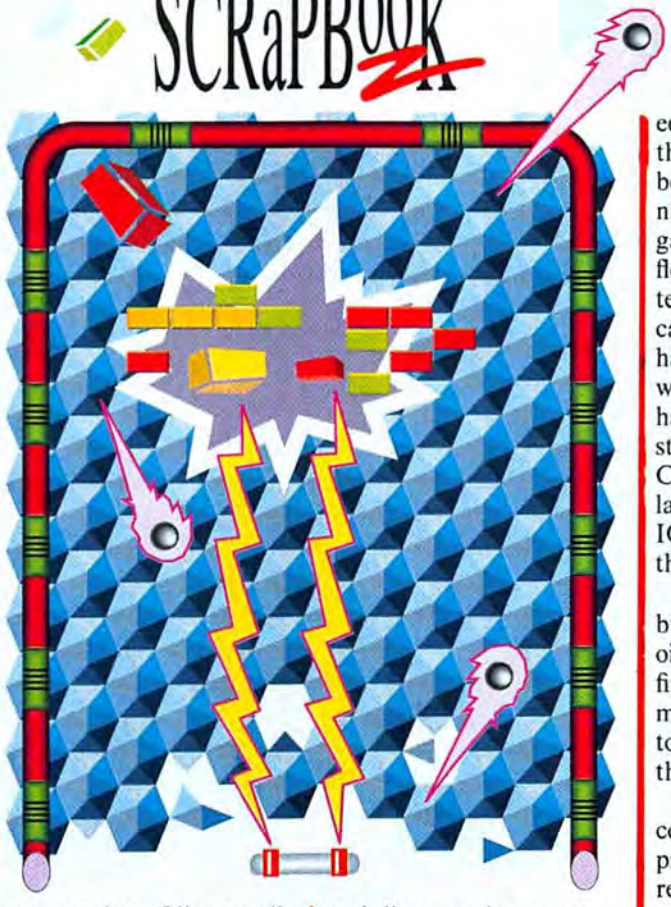
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SCRaPBOOK

ARKANOID



Remember when Crystal Quest came out and everybody breathed great sighs of relief that there was finally an arcade-style game for the Mac? Now we really do have an arcade game for the Mac. The real thing. Arkanoid — no, not a large boat for small claymated characters with floppy ears from Domino's Pizza commercials — is the arcade game we've been waiting for.

Arkanoid is a tremendously spiffed up incarnation of the classic Breakout. For those not in the know, Breakout was one of the primal paddle-type video games where the player bounced a ball off of a paddle at the bottom of the screen to hit and remove bricks layered higher up on the screen. Arkanoid made immediate addicts of several members of *MacUser*'s staff, myself included. When Crystal Quest appeared, a *MacUser* editor was quoted as saying that the game was so hot he had to ban it from the office. Well, anyone who ever tried banning *this* game from the office would have a mutiny to deal with.

Arkanoid is played in a window the size of an ordinary Mac screen. It does not get larger for Mac II users, nor does it need to. The playing window consists of a field containing a background, brick formations, and the player's paddle at the bottom of the screen. To the right are the player's score, the high score, and the numbers of lives left to the player.

The startup dialog box lets the user choose one- or two-player mode, the maximum number of lives available, and whether the player should be considered Beginner, Normal, Advanced, or a Jedi Master. Even the Advanced level provides an amazingly fast ball on the Mac II.

Game play and animation are both extremely smooth. A ball may start out moving at a survivable pace, but the longer a ball is in play, the faster it gets.

For those people with bosses who enjoy watching over their shoulders, Arkanoid features a boss mode. Just hit the B key and up pops a word processor (the name of which should amuse a certain company in Orem, Utah). Although it is not a full-featured word processor, future versions may very well include Save and Print functions. Then not only will you be getting a wonderful game, but you will also have a good quick-and-dirty word processor.

Arkanoid is also proof that an arcade-style game can be made Macintosh legal and even MultiFinder *friendly* (as opposed to *tolerant*). This is something that most Mac games don't even attempt. The game ran fine in the foreground while a MicroPhone II dialer script did its thing in the background. On another occasion, Excel imported a file in the background while I played Arkanoid. Aside from a minute jerkiness, there are no adverse side effects, although the version of MultiFinder used can affect the smoothness of game play.

Arkanoid is also novel in the area of copy protection. It isn't protected — unusual for a game. Realizing that a determined cracker would bypass any copy-protection mechanism on the game and distribute it, Discovery Software decided to remove it. Besides, the legitimate user would be faced with the inconvenience of launching the game from the original floppy. Without copy protection, legitimate users can put the game on their hard disks and play it whenever they like without hassle. I immediately installed Arkanoid into On Cue, an application-launching utility from ICOM Simulations, and that's saying something.

If you like this game, buy your own copy. Arkanoid is Discovery Software's first venture into the Mac market; if you want them to keep producing games of this quality, support them.

As far as *more* fun is concerned, Discovery promised (at press time) to release the Arkanoid Construction Set in the second quarter of '89. It will enable you to design your own brick fields, use digitized pictures as the background, and make games with many more levels than the original. For an Arkanoid addict, the construction set will be the ultimate tool for continued bliss. And look for a full-color version of Arkanoid, possibly by the time you read this.

— *Stephan Somogyi*

Arkanoid

List Price: $49.95
Published by: Discovery Software, 163 Conduit St., Annapolis, MD 21401; (301) 268-9877.
Version: 1.00
Requires: 512K RAM
Compatibility: Mac II and MultiFinder friendly.
Application Size: 315K
Copy Protection: None



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A LITTLE DAB'LL DO YA

If you like to spend an evening with your feet on the desk and the keyboard on your lap, you have surely had it slide toward you about a million times. A good way to remedy this is to put Velcro on the bottom of your keyboard and on your clothes, though I recommend putting it on your clothes temporarily unless you want to make a fashion statement. [*Be careful to remove the keyboard from your lap before leaving your computer. Otherwise, you risk dragging your Mac with you wherever you go. — Ed.*] If you don't care about the clothes you wear when you're working on your Mac, you might try beeswax as an alternative. Just apply it generously to the bottom of your keyboard — no slipping.

ERIC BEAR ALBRECHT
TAOS, N.M.

SHUT YOUR TRAP!

Maybe you like to keep your Mac and its peripherals covered when they're not in use. When I first got my Mac, I didn't like being able to look all the way into the disk drive opening to see those glowing lights and wires curling around all over the place. Being a smoker and not a very good housekeeper, I was a little concerned about what might be going into the Mac's mouth besides 3.5-inch disks.

I started covering the openings (both the Mac's and the external drive's) with little doors I made of heavy paper and duct tape until I noticed that the tape was adversely affecting the Mac's finish. I have since discovered the perfect ready-made product for the job — Post-it Notes. These pads come in many sizes, including 3 x 5 inches, and have a special nondestructive adhesive. You can use them just as they are right off the pad or do as I do and make little handles for them. MacMouthShut is what I call it. Just put the adhesive on top of the drive housing and give the paper a right-angle bend down.

Keep your MacMouthShut and have many happy, smiling startup icons.

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A SPRINKLE A DAY

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That's when I decided to hit the showers, literally. Just take the cover of the drive into the shower with you. Rinse out the filter from the inside of the case first and rotate it to rinse the outside (so you don't create a soggy mess). Blow dry. Now you have a clean, blue filter through which you can see the drive light.

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THE DEVIL'S ADVOCATE



The Green Badge Discouraged

It was crowded. It was noisy. It had a stench of cheap hot dogs and too many bodies in a badly ventilated space. It was Macworld Expo in San Francisco.

Given all that, there was only one thing about this show I didn't like. For some unknown reason, the show management decided to get cute and color-code the badges. All the badges of the exhibitors were dark green. The ink of the embossing machine was black. You could not read the names on the badges with this dumb combination of colors, so you never knew who you were talking to. So much of the conversation was wasted thus: "Oh, you don't work at this booth? Excuse me, do *you* work at this booth? Oh, Miss, can you tell me where I can find someone who works at this booth?" Normally you'd look at the badges to see the company name. Not here.

It was particularly embarrassing when your "old friend" said hi — an old friend whom you couldn't identify because he'd lost 50 pounds and you hadn't seen him for five years. "Hi, John! Long time, no see."

"Yo! Yeah, yeah. Right! How you been!" (Thinking: Who the hell is this guy?)

The green badge strikes again.

If there was another problem, it was that the show spread from Moscone Center to Brooks Hall across town — and you couldn't take a cab twixt the two. Some deal was made to keep the cabbies out of the front entrances so the sluggish shuttle buses could monopolize the event. So people complained.

I don't know what show promoters can do to prevent popular shows from overflowing into other facilities. They won't simply put a lid on booth sales and say, "Hey, we're filled up, sorry." They won't tell a company like Apple that it's buying too much floor space, as in: "Whoa, you want way too much space!" They won't limit anything, knowing that today's money-maker will subsidize tomorrow's feared dog of a show. Simply put, we're stuck with the fear and loathing of these split-up and spread-out shows unless we always want to go to Vegas or Chicago — and the biggest shows overflow even those cities' monstrous facilities.

But if we are stuck with overflows like this, can't we do these shows in more interesting surroundings? Like New Orleans? Too bad the mentality of today's show-goer ignores most shows that take place in offbeat but interesting locales. The now-defunct SoftCon show was tried in New Orleans, as I recall, and established an aura of failure for the event. I can't understand it. Even Los Angeles doesn't seem to draw a decent crowd. Both Comdex and the original West Coast Computer Faire have tried and failed in L.A.

The only acceptable places to hold a major technology-related show, it seems, are Las Vegas, Anaheim, New York, Atlanta, and Chicago — and maybe San Francisco and Boston. The Las Vegas Convention Center (the biggest there is) offers an immediate million square feet of space. In addition, each of the major Vegas hotels has its own convention center. Critics of big shows, myself included, have long since determined that it's a physical impossibility to see any trade show adequately in facilities this size. But most show-goers don't need to see the whole show. They go because it's an opportunity to meet certain people. They make appointments and see what interests them.

The show attains critical mass when you know everyone is going to be there. Salespeople know it's a chance to corner their best prospects. So the big shows thrive despite the protests of lazy writers who claim these shows are too big and too unwieldy, like dinosaurs.

Actually, they're more like H-bombs than dinosaurs. The bigger the critical mass, the more effective the explosion. Bigger is better. And the big-show phenomenon means that the small convention center operators like Reno, with its nifty 200,000-square-foot center, will never be the nexus of anything other than state and regional conventions.

Will anything thwart this worsening trend? Personally, I hope so. I'd hope that people would get sick and tired of going to the same five superficial cities and staying in the same boring, homogenized hotels year after year after year. Wouldn't these show-crawlers like to visit Miami or Pittsburgh or Philadelphia or Denver or New Orleans once in a while?

Unfortunately, the answer is no. Today's businessperson is not an explorer. Plenty of people fly into a city, take a cab to the hotel, go to the show, take a cab to the airport, and fly back home. The idea of exploring a new city and its environs isn't a consideration. After all, what does a CEO expect to learn from a drive through the outskirts of Birmingham?



I'm sure these people would learn something, but you can't say what it might be. Perhaps they'd discover something about how people in the real world feel about and use computers. Perhaps they'd stumble across an untapped market or find the perfect night spot for power schmoozing. Perhaps they'd learn that you can't read black ink on a dark, green background. That would be a start.

BY JOHN C. DVORAK

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